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THE LABOR MARKET, POLITICAL CAPITAL, AND OWNERSHIP SECTOR IN URBAN CHINA

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ABSTRACT OF DISSERTATION

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A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Business and Economics
at the University of Kentucky

By
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Lexington, Kentucky

Co-Directors: Dr. John Garen, Professor of Economics
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Over the past three decades, economic reforms have brought about dramatic changes in China. The wave of structural and economic reforms regarding the State-owned Sector (SOS), and the surge of the Non-State-owned Sector (NSOS), have influenced returns in the labor market, such as the returns concerning human capital and political capital in urban China. Presumably, the NSOS would be more marketed-oriented compared to the SOS, and it would have different returns concerning political capital, as represented by Chinese Communist Party (CCP) membership. This is likely because the NSOS would not value Party membership as much as the SOS does. The question of how Party membership is rewarded in the two sectors might also change with the development of the two ownership sectors, as more time passes since the establishment of the economic reforms.

I examine whether CCP members display any earnings advantage in these two sectors, and I also explore how such an advantage might have changed over time. Unlike most of the previous studies that have focused on earnings in urban China, I treat Party membership affiliation and ownership sector selection as being endogeneous. I apply the Mlogit -OLS two-stage selection correction estimation proposed by Lee (1983) and discover evidence which suggests that Party membership serves as a proxy for both political and productive skills. A flat Party premium in the SOS and a decreasing Party premium in the NSOS suggest that the Party card served a similar function in the payment scheme present in the SOS during this three year span, whereas the NSOS valued political capital by a decreasing amount over time.

The evidence presented in my dissertation indicates that economic reforms tend to mitigate the earning advantage of Party members that occurs as a result of unequal treatment based on Party membership. This evidence suggests that CCP membership is losing its earning power, at least in the NSOS. In addition, the CCP members sacrifice the benefits previously possessed in the adaptation to the transformed economic environment in urban China. However, the rewards to other forms of human capital have increased over time.

KEYWORDS: CCP Membership, Ownership, Mlogit-OLS Two-Stage Selection Correction, Labor Market, Party Premium

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To my parents, my husband and my son

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Introduction

Decades of economic reforms have brought about dramatic changes in China. Reforms leading towards a market economy have gradually weakened the dominant role of 'Central Planning' in China. Private ownership is allowed to coexist with public ownership, which moves the economy away from central price-setting toward a market-oriented system. One would expect these reforms have influenced returns in the labor market, such as the returns to the human capital and political capital. It is expected that the Non-State owned sector (NSOS) would be more market-oriented compared to the State-owned sector (SOS)[1] and the returns in NSOS would mainly depend on labor productivity. However, it is not clear what role political capital, as represented by Chinese Communist Party Membership (CCP) would play in either sector. If CCP membership is associated with higher productivity because of screening or Party benefits, then they would earn more in both sectors. However, if they have political skills only but no differential in productivity, then they may only be better off in the SOS and not to be rewarded (or even worse) in the NSOS. In this dissertation, I focus on the annual earnings of CCP members and other workers in urban China's labor market from 1988 to 1999, which covers two important phases of economic reforms: a moderate reform phase (1988-1995) and a radical reform phase (1995-1999). I look into the personal choices concerning political investment and ownership forms of the work sector in urban China. I examine whether CCP members in the SOS have been as successful as those in the NSOS at obtaining economic advantages, compared to other workers in urban China.

The labor market in China has gradually moved toward a market-based system. From 1978 to 1999, the employment rate of State-owned units fell from 78% to 41% of the workforce in urban China (See Figure 1.1). The Collective-owned units fell from 22% of the workforce to only 8%. But other Non-State-owned units grew to 51% of the workforce over the same time period (NBS Year Book 2000).

[1] Generally in urban China, SOS includes government agencies and State-owned enterprises, while the NSOS in urban China includes urban collective enterprises and other private sector. We are not able to separate government agencies from state-owned enterprises in the 1988 CHIP sample.

The Chinese government went through a series of structural and economic reform efforts for State-owned enterprises (SOEs). The reforms were aimed to decentralize the decision-making authority out of the central ministries, to reduce the role of the CCP in the economy and to allow SOEs to enter the market by being responsible for price setting, selling outputs, and purchasing inputs. A multiple-stage management contract system was launched for SOEs, and this development took place over a gradual period: the tax-for-profits[2] and contracted management system (CMS)[3] was put in place between 1983 and 1985, followed by the management responsibility system (MRS)[4] and internal contract system (ICS)[5] that began in 1985. Finally, the shareholding system[6] was inaugurated in the 1990s. All these reforms contribute to the development of the labor market in urban China, because SOEs have increasing autonomy to recruit employees while government has ceded administrative allocation of labors. By 1989, the new managerial system was established in most of the large and medium SOEs employing more than 1000 workers

[2] Under 'tax-for-profits' system, large- and medium-sized SOEs paid 55% of profit as enterprise income taxes and small ones a progressive income tax, while government levied an excess profits tax. Tax payment is part of contract responsibility system (Lee and Warner 2007).

[3] In the CMS, SOEs signed a contract with the state about mutual responsibilities and are responsible for the profits and losses. It emphasized retained profits to make compensations. It required SOEs to keep separate accounts of state-owned funds and enterprise-owned funds. Accumulated enterprise-owned funds served as a risk reverse which was used to remit to the state when SOEs failed to achieve profit target. It was intended to separate ownership from management (Lee 1993).

[4] MRS was aimed to separate management from the Party. Under the MRS, the Party no longer held supreme power in the enterprise. Party committee's roles were reduced to the area of 'party organization' and 'ideological work'. The manager was supposed to have autonomy on production, marketing, investment, wages and bonus policies, worker training and use of enterprise funds (Lee 1993).

[5] The ICS was a practice of contract in SOEs internally at each level. For example, the bottom level was the division of contracted work by team leader into individual workers. Under the ICS, middle-level managers and division directors were regarded as individual contractors, while divisions were group contractors. The bonuses of middle-level managers and of division directors depended on the fulfillment of main contracts with the state, not division targets. As for group contractors, upon fulfillment of division targets, bonus funds were released to the divisions by the manager. Over-fulfillment of quotas were rewarded accordingly (Lee 1993).

[6] Shareholding system was in the phase of experiments in the late 1980s and introduced to resolve the problem of ambiguous property rights relations between the state and SOEs. The stocks of the shareholding company could consist of state shares, enterprise shares, and individual shares. Under this system, the enterprise first paid income taxes, then remaining profits were divided into accumulative funds, collective welfare funds, and risk funds, and the final residual was distributed as dividends. Since 1993, some SOEs were reformed as 'Shareholder Corporations' and 'Shareholder Partner Companies'. 'Shareholder Corporations' are owned by internal shareholders (such as managers and employees) and external shareholders (other companies or individuals). These firms have been subject to a variety of regulations and forms of governance, and to overall supervision by the State Assets Administration Bureau. Smaller SOEs are allowed to be purchased and managed by individuals and so called 'Shareholder Partner Companies'. The state plays little role in these firms (Lee and Warner 2007).

(Sullivan 2007). The coverage expanded quickly from 0.16 million workers in 1984 to 7.26 million workers (approximately 8% in SOEs) by the end of 1986. It has further increased to 39 percent of the total employed population in 1995 (Meng 2000). With the implementation of this new system, the lifetime employment in the SOEs, called the "Iron Rice Bowl", no longer existed. Lifetime employment used to provide workers permanent protection from unemployment, as well as supply them with stable wages and potential opportunity for advancement. After the economic reforms, the "Iron Rice Bowl" no longer ensured this type of lifetime opportunity, and the loss of this practice further weakened state and local labor authorities' power. State and local labor authorities abolished recruitment quotas by the 1990s and SOEs were granted greater autonomy to recruit new employees based on the needs of business and the quality of applicants. Another large scale reform that occurred for SOEs was the decision to shut down nearly one-half of all companies with long-term prospects of losses and involvement in so-called 'debt chains'. As a result, 27 million redundant workers were laid off and encouraged to find new jobs in the expanding private sector (Sullivan 2007).

On the one hand, unlike post-Communist Hungary, Poland, and Russia, socialist-state institutions in China have not been completely abandoned. Gradual reform in the economic realm and the persistence of socialist-state institutions have led to a particular coexistence of multiple ownership forms: government agencies, SOEs, collective enterprises, and other private-sector enterprises. In this particular social stratum, the CCP has not lost its control over the allocation of resources through its control of the SOS. The lack of complete market-supporting institutions makes the government intervene even in private businesses by imposing unnecessary regulations or high tax rates, to some extent. On the other hand, the CCP has expanded the role of the market forces in SOEs, and it has also increased the scope of privatization in the NSOS to achieve its primary economic goal. The private enterprises in the NSOS grew from zero to over 38 million firms from 1978 to 2001, producing more than one-third of China's industrial output (Li, Meng and Zhang, 2006). The booming NSOS created more job opportunities, which not only absorbed part of the population of laid off workers from SOEs, but also allowed for workers to obtain greater autonomy in choosing their jobs, because some of the new opportunities available in the NSOS better met their needs; this group included some

CCP members who used to work in the SOS[7]. The speed with which the NSOS has developed, has far outpaced that of the SOEs. However, private firms were considered an inferior ownership form for ideological reasons and subject to various restrictions in the 1980s, despite the existence of formal legislation permitting their existence. Since the early 1990s, the government has attempted to discard ownership discrimination and acknowledge the important contribution that private enterprise has made to China's economic development. But the market environment is far from being truly fair for private enterprises, given ideological obstacles and imperfect market mechanisms.

In this type of particular economic stratum in China, people have not only sought to improve their lives through the economic opportunities created by the market economy, but they have also experienced an ideological transformation in order to meet the markets' need. On the one hand, Party members face difficulties in maintaining Party principles in this type of market. More and more, CCP members have abandoned their Party responsibilities to pursue economic opportunities. They have left their jobs in the SOS to go into the NSOS with other workers[8]. Dickson (2003) labels these people as 'xiahai entrepreneurs' in the NSOS. The studies on private entrepreneurs have found that many of the wealthiest entrepreneurs formerly held high-level Party and government posts. A far larger number of private entrepreneurs were former mid-level officials, or simply rank-and-file Party members who did not hold formal posts but left their previous jobs to go into business. Some of these Party members were laid off in the course of the SOEs reform and then became reemployed in the NSOS. On the other hand, private entrepreneurs in the NSOS became willing to join the CCP after demonstrating their entrepreneurial skills and business success. In the early stages of economic reform, the NSOS expanded so fast that most enterprises did not have Party organizations embedded within them, and few new members were recruited from their work units. While all the local Party organizations or other local organizations such as Federation of Industry and Commerce can process the applications from the NSOS. The only ban was imposed on the entrepreneurs in private firms between 1989 and July 2001, which does not formally

[7] CCP imposed a ban to forbid the recruitment of the private entrepreneurs in August 1989, but relieved it in July 2001 (Dickson 2003).
[8] This phenomenon is called as *xiahai*, literally meaning a plunge into the sea.

allowed them to join the CCP. However, the ban was not so effective because recruiting entrepreneurs into the Party is advantageous for both local officials and entrepreneurs. Even before the ban was lifted, it is widely recognized that private entrepreneurs made significant contribution to the development of economy and their innovativeness, administrative skills could be modeled as advanced productivity. Some local Party committees found ways to circumvent it. 'Some local Party committees classified private enterprises as collective or joint-stock enterprises, thereby allowing them to recruit their leaders while remaining in technical compliance with the central ban.' (Dickson 2003)[9] To adjust its policy to correspond with this rapidly changing economic and social environment, the CCP lifted the ban on July 1, 2001. There are two reasons to believe that the ban would not make harder for a worker in the NSOS to be recruited into CCP. First, the ban was not imposed on either the employees in the NSOS or entrepreneurs in other ownership forms in the NSOS, and the major component of the NSOS is Urban Collective Enterprises (UCEs) in this dissertation. Second, all the applicants are fairly treated regardless the ownership. To adapt to the new economic environment, CCP reinforces its connection to the NSOS and makes more convenient for their employees to apply for the membership.

However, unlike in the pre-reform era, the willingness of individuals to join the CCP was seldom driven by their political beliefs and ideological loyalty. As the economy moves away from central planning to market-oriented, people compete for economic opportunities to earn more. At the same time, since the CCP has a monopoly power in the political and economic system, people also believe that Party membership helps them to establish broader social networks and gain easier access to valuable information, which, in turn, could provide them, either directly or indirectly, with economic benefits that they would not otherwise have access to. For example, comparing to the 1980s, workers in 1990s are more likely to regard membership as reward-related capital and have such incentives to join the CCP either in the school or in the work place, rather than pure communist ideology. Entrepreneurs in 1990s (especially in NSOS) are more willing to convert economic influence into political power as well, such as accumulating political

[9] Shenzhen even created special party branches for them who join the party.

skill, which, in turn, could bring them more benefits. Those who possess the ambition to pursue political successes are more likely to self-select into the CCP and work for the SOS, which is under the direct control of the CCP. Those who prefer a relative stable job but have no political ambitions are more likely to self-select into NonCCP/SOS category, while innovators would be more likely to be in the NSOS. Their personal choices about career and political investment become more market-oriented and depend on individuals' preference rather than a central assignment, which was the previous practice and did not allow workers to choose jobs which corresponded with their own desires. Most literature does find economic advantages for CCP members as the market reform grows in importance, and these studies tend to explore potential explanations for this outcome (Morduch and Sicular 2000; Lam 2003; Liu 2003). Party membership per se, in theory, is not supposed to have an influence on one's career or economic circumstances. When markets intrinsically reward productivity and entrepreneurial initiative rather than political power, the findings of the economic advantages associated with Party membership might indicate that Party card acts as a screen for high productivity, which makes membership an economic factor in the labor market in China. Li, Liu, Zhang and Ma (2007) use data obtained from twins to reexamine returns to CCP membership by controlling for the omitted ability and family background. They find zero within-twin-pair estimates which indicate a contribution of the CCP members' instinctive high abilities in relation (or more advantageous family background) to their capacity to achieve higher earnings[10].

One of the important features of this dissertation is that we treat both CCP membership affiliation and ownership sector choice of a worker as endogenous variables in the earning equation. Many studies completely ignore this issue of endogeneity. Instead, they control for CCP membership affiliation and ownership sector choice using a set of dummy variables in a single earning equation (Liu 2003; Bishop and Liu 2008). Other studies, such as Lam (2003), Appleton, Knight, Song and Xia (2003) and Li, Liu, Zhang and Ma (2007), have allowed for the endogeneity of the CCP membership affiliation but continue to treat the sector choice as exogenous; Zhang (2004) considers

[10] They did sensitivity analysis on omitted variable biases, measure error and within-family externality.

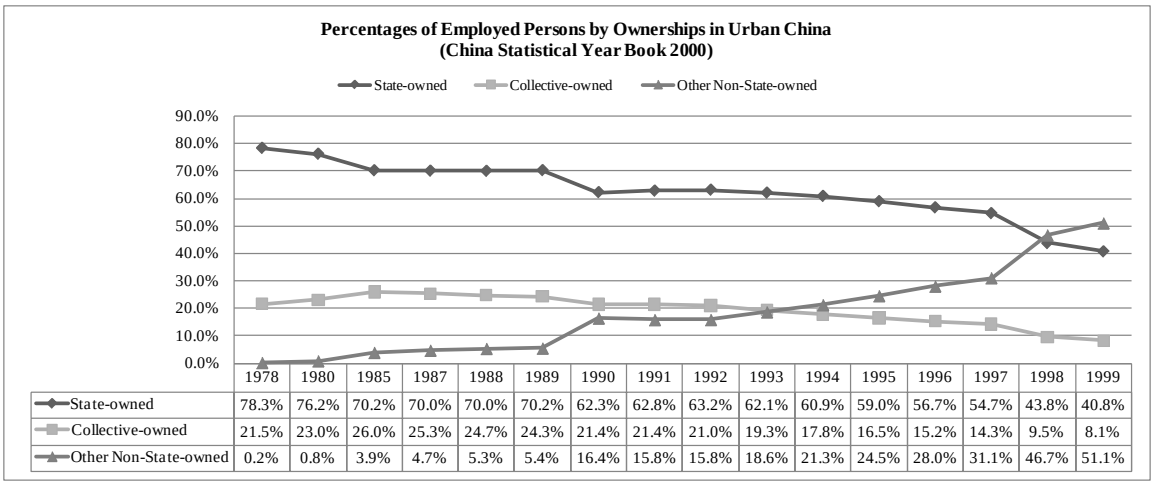
the endogeneity of workers' sector choice but treats CCP membership affiliation as being exogenous. According to the Party constitution, CCP members are supposed to differ from other workers in observable characteristics. For example, during the lengthy selection procedure, the candidates usually need to outperform their co-workers (or their classmates if in the school). They also differ in unobservable characteristics such as ambition and opportunism, as well as possessing a knack for organizational activities. All these characteristics make CCP members more successful in their choices of the ownership forms associated with their jobs; it also makes them more successful in the way they are selected into the CCP and how they obtain material advantages. Not treating each variable as endogenous may lead to selection bias in the estimated earning equation. To address this problem, we apply the Mlogit -OLS two-stage selection correction estimation proposed by Lee (1983). Given that individuals exercise some choice over both their political decisions and also, the ownership forms of their jobs, I classify current workers in urban China into four categories: CCP members in the SOS; NonCCP workers in the SOS; CCP members in the NSOS; and other workers in the NSOS. To my best knowledge, this is the first application of Lee's selection model for this specific problem. This dissertation examines how the characteristics of workers are different in four categories, as well as how they are different in affecting the probability of workers being in each group. Another important feature of this study is that I predict how earnings can change if workers join the Party in each sector, by decomposing the CCP-NonCCP earning differential in each ownership sector.

Four major questions addressed in this paper are: (1) How did total earning gap between CCP members and other workers, in the SOS and NSOS, change from 1988 to 1999? (2) How did the contribution of human capital to earnings vary by political status of workers in each sector? (3) What did the decomposition of earnings differential between CCP members and other workers show in each sector? (4) How did Party premiums change in the SOS and the NSOS during the early reform period that lasted from1988 to 1995, and in the radical reform period from 1995 to 1999? I find evidence that the contribution of higher education to CCP workers' earnings is not as much as it is for other workers' in the SOS; the investments on human capital did play an increasingly important role in the earning structure of NonCCP workers in the SOS throughout three

stages of the economic reforms, and it did so more quickly and strongly than it did for CCP workers in the SOS. The results from the NSOS indicate that different returns brought about because of different educational levels became more significant to NonCCP workers in the NSOS over time; the human capital and political capital were complements in 1988, while they became neither complements nor substitutes in the late 1990s. There is evidence that the total earning differential in favor of CCP workers in the SOS increased dramatically during the early reform period from 1988 to 1995, and then it leveled out in 1999; at the same time, it was decreasing in the NSOS between 1988 and 1999. In addition, the CCP-NonCCP earning decomposition in either sector shows that the proportion of endowment differences increased over time, while the unexplained proportion decreased in three years. The coefficient differentials in favor of CCP workers decreased dramatically in the early reform period from 1988 to 1995, until it faded away in 1999. The predicted Party premium for an average worker slightly increased in the SOS but declined in the NSOS during three years being studied. The predicted Party premium in 1999 indicates that the political capital became less important in the payment scheme in the NSOS. My findings suggest that CCP membership is losing its earning power at least in the NSOS.

The rest of the dissertation proceeds as follows. In Chapter 2, I review the current literature regarding the economic impact of political capital. Chapter 3 introduces the selection process for membership in the CCP. In Chapter 4, I provide a theoretical discussion on the determinants of investments in political capital and the econometric model. In Chapter 5, I introduce data sources and describe variables. The analysis on two-stage estimates of the earning equation is offered in Chapter 6, including earning decomposition results and discussions about how membership choice and choices of ownership of work unit affect workers' economic outcomes. Chapter 7 concludes and provides some policy implications.

Figure 1.1 Percentage of Employed Persons by Ownership in Urban China



	1978	1980	1985	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
State-owned	78.3%	76.2%	70.2%	70.0%	70.0%	70.2%	62.3%	62.8%	63.2%	62.1%	60.9%	59.0%	56.7%	54.7%	43.8%	40.8%
Collective-owned	21.5%	23.0%	26.0%	25.3%	24.7%	24.3%	21.4%	21.4%	21.0%	19.3%	17.8%	16.5%	15.2%	14.3%	9.5%	8.1%
Other Non-State-owned	0.2%	0.8%	3.9%	4.7%	5.3%	5.4%	16.4%	15.8%	15.8%	18.6%	21.3%	24.5%	28.0%	31.1%	46.7%	51.1%

Note: The data is from Table '5-4 Number of Employed Persons at the Year-end by Residence in Urban and Rural Areas', China Statistical Year Book 2000.

Chapter 2

Literature Review

2.1 Introduction

There are a tremendous number of papers and books which study economic reform in China. The economic reform is leading China away from a planned economy to a market economy. The most important change in the period has been the entrance of the NSOS, including collective, private, and foreign firms into the economy. In 2002, the NSOS employed 70% of workers in China and produced two-thirds of the GDP. Implementation of a wage system reform in the SOS made wage determination more productivity-related. The Ministry of Labor (MOL) in 1985 announced that the budget to be allocated for wages of SOEs will depend on the economic performance of SOEs, which was measured by SOEs profitability or a combined indicator of economic returns. In 1992, the State Council allowed SOEs to set their internal structure within the confine of the overall wage budget determined by government. Starting from1994 to 1995, more and more SOEs were permitted to set their own wages based on productivity and skills[11]. It suggests that the wage in the SOS becomes less determined by CCP but more influenced by the market. By doing so, the wage differential between the CCP and other workers in SOS is expected to become closer to that of the NSOS over time. If the NSOS values CCP membership less than does the SOS, with the weakening of Communist Ideology, it is expected to find declining returns to CCP membership at an overall level, and less demand for CCP membership by the younger generation over time.

The economic implications of political status and political connections in the transition or developed countries have attracted numerous researchers in both the economic and sociological literature (Gerber, 2000; Fisman, 2001; Agrawal and Knoeber, 2001; Johnson and Mitton, 2003; Khwaja and Mian, 2005; Faccio, 2006). In China, there is a growing interest among economists and sociologists in studying this association at different stages of the economic reform since 1978. Many studies have found that CCP

[11] But wage-setting in the SOS needs to meet two standards. The first is that the growth rate of total wages must be lower than that of after-tax profitability and the second is that per capita wage growth is lower than the rate of growth of labor productivity.

membership has had a positive value on personal income during China' economic transaction (Morduch and Sicular(2000); Lam(2003); Liu(2003); Li et al., 2006; Appleton, Knight, Song and Xia (2006)). Within the first decade, the market reform in urban China was still at an early stage, while China's rural area economy had undergone a dramatic transition from a collective economy to a market-like economy in terms of multiple ownerships, a shift in market power, and diversities of income sources. The earlier research on the effects of the market transition on social stratification mainly used small survey data in rural China in the 1980s. These studies are preoccupied with the question of cadre advantages, including the economic returns to political position in the rural area (Nee, 1989, 1991, 1996; Cook, 1998; Morduch and Sicular, 2000). The term cadre stands for the official, and cadre status represents a person's political position in the administrative hierarchy of state socialism. Nee (1989) combines economic and sociological perspectives and argues that the short-run cadre advantages in rural China will shrink over time, relative to ability, as market institutions become more firmly rooted, and a market economy rewards private entrepreneurship and human capital. The empirical findings are based on the Fujian Rural survey project in 1985. In this project, 725 households were randomly selected from 30 villages in two counties in Fujian. The author found no evidence that cadre status and social network ties (guan xi) built up during the tenure, as cadres confer economic advantage during the market transition. Most literature reaches a broad consensus that cadres in rural China continue to enjoy advantages in the short-run. However, there is a debate on how cadre advantages change over the long-term, given the empirical evidence of large economic opportunities for rural cadres and their families in the market reform (Cook, 1998; Morduch and Sicular, 2000). Morduch and Sicular (2000) use 4-year longitudinal household data sets (1990 - 1993) from 16 villages in the county 'Zouping' located in central Shangdong province. The significant and increasing cadre advantages over time indicate that an accelerated market liberalization enhanced village-level cadre's economic advantages after Deng Xiaoping's southern tour in 1992. They find that the households with a village-level cadre have a continued significant income benefit. Other studies find that these cadres have more opportunities to accumulate market entrepreneurship than the public when the market reform allows them to invest and manage public assets in collective enterprises.

Social network ties (guan xi) also built up during the tenure, as cadres make it easier to acquire strong positions for their family members in the local industry; this possibility helps family members gain access to credit, as well as facilities used in building or operating their own private enterprises. The benefits accrued through privatization ensure that the advantage from the cadre persists over time. Walder (2002) argues that, "Just as the evidence of surviving cadre advantages in the short run does not refute the notion that market reform eventually erodes cadre privileges, evidence of a downward trend does not refute the notion that market reform provides opportunities for cadre enrichment… The latter view does not imply that current cadre advantages will prove eternal." He uses a national random sample of households drawn from all regions of China (excluding Tibet) in 1996 to test whether market reform inherently reduces the relative returns to the cadre position. He not only analyzes the current magnitude of the cadre advantage but also compares the economic returns to cadre position and entrepreneurship. He finds no evidence of declining cadre advantages in the second decade of reforms due to the privatization of rural public enterprises at a national level; the economic advantages of cadre households are of comparable magnitude to those of private entrepreneurs. These findings suggest that the expansion of the market economy in rural China creates two distinct opportunities for success and income sources for cadre position and entrepreneurship.

Economic reform in rural China established a rural labor market, which generally consists of an agriculture sector and a non-agriculture sector. The labor arrangement in the agriculture sector is included under the 'Household responsibility system' (HRS)[12] and it has fundamentally improved the labor incentive system. Meng (2000) finds that under the new HRS, the household labor allocation in this sector has gradually shifted towards a market-oriented system. Their income was distributed upon labor productivity and labor supply which responded to market signals, which, in turn, generated large productivity gains in this sector. Meanwhile, the development of the HRS has brought

[12] The Chinese Government introduced the HRS to the whole country in 1978. HRS allows land to be owned by the collectives and contracted out to households. Under HRS, households need to fulfill a state production quota for certain agriculture products, and to deliver a levy to the collectives. Given the fulfillment of production target, they have their autonomy to allocate their resources, decide production structure and determine income distribution among family members.

about a dramatic growth of the rural non-agriculture sector. Between 1978 and 1983, the formerly commune and bridage enterprises (in place during the pre-reform era) were transformed to rural township, village-owned enterprises (TVE) by applying the HRS to their processes and changing their income distribution system from the work point system to a within-firm wage system. Managers of most TVEs had decision-making power over wage determination from as early as 1985. However, labor recruitment in TVEs moved quite slowly towards a market system, and they were not much more flexible in their hiring and firing of labor until the early 1990s. At the same time, other privately-owned, joint venture and fully foreign-owned firms have become their biggest competitors in the non-agriculture sector.

To avoid open unemployment and guarantee a sufficient supply of grain to the cities[13], the government has created segregation between rural and urban areas under the household registration system since the CCP came to the power in 1949. The highly restrictive labor mobility policies excluded rural people from working in the cities. Rural workers were not covered under the same housing, medical expenses and social security program with urban employees. This feature did not undergo significant improvement until the beginning of the 1990s, when urban industrialization heavily demanded rural labor in urban areas.

Economic reform in urban China started with liberalizing the product market progressively, and then it proceeded to labor market reform at a much slower pace, which was not as successful as product market reform. Meng (2000) finds that the labor market reform in the first decade failed in increasing worker incentives, and it did not result in a productivity-related wage determination system. Due to the segregation of rural and urban areas, the labor markets prove to be incredibly different in these two areas. The urban labor market is complicated in terms of invisible constraints placed on labor mobility, multiple ownership structures of enterprises, and political sensitivity. The wage rates, for example, often deviated from the market rate due to rigid wage systems and government interventions in the labor market. However, political status in China is generally treated as one factor in the income equation, in accordance with how

[13] There was no documented justification for this policy. Meng (2000) proposes a potential reason that the marginal rate of technical substitution between land and labor was relatively higher in rural areas.

economists treat human capital in most literatures on the returns for schooling and income inequality.

Empirical studies of the returns to the political status of the labor market of urban China generally proceed from the following perspectives: (1) if political capital and human capital are supplements or substitutes; (2) does Party membership affect rent seeking or screening; (3) is Party membership demand determined or is supply determined; (4) political capital in different ownership sectors; (5) the endogeneity problem of Party membership. In the following sections, I summarize the current studies and their findings in each of these categories.

2.2 Human Capital and Political Capital, Substitutes or Complements?

Among the considerable body of empirical literature on the return to human capital in China, a few studies compare it to returns on CCP membership in urban China. Dickson and Rublee (2000) provide a good profile analysis on all CCP members surveyed in CHIP 1998. They examine the impacts of CCP membership and human capital on the regular wage and total monthly income (including bonuses and various subsidies as well) in 1988. They do find monetary benefits for the individuals with CCP membership. When they further break CCP membership into rank-and-file and cadres[14], they find those with more political capital (cadres) benefit more than regular members in the regular wage equation. A cadre position is more important than a college education for regular wages, while rank-and-file membership is not as important as a college education. However, the impacts of cadre and rank-and-file on the total income make little difference. The cohort analysis of determinants of regular wage and total income come to this conclusion: the political affiliation, rather than human capital, is most important to 41-50 cohorts who are educated and first gained employment during the Cultural Revolution. Their finding of less explanatory power of the total income equation than the regular wage equation is consistent with previous research (Griffin, Zhao, 1993; Walder 1995; Xie and Hannum, 1996). Their findings imply that wages in China are distributed according to seniority and

[14] Dickson and Rublee (2000) defined CCP members who work as laborers, office workers, and professional and technical workers as rank-and-file members, and those who work as managers or officials as cadres.

education. However, bonuses and subsidies are less dependent on an individual's attributes than on the profitability of SOE itself. In turn, SOE's profitability is itself less dependent on performance than on government-set prices and soft budget constraints. In this dissertation, I study only current workers rather than all individuals in the CHIP.

Liu's article (2003) is among the early attempts by economists to present a theoretical discussion of treating CCP membership as political capital in the urban labor market in China. Like human capital, he treats political capital as "productive investment embodied in people, including political skills and the characteristics as having belief in and being trusted by a certain political Party." Making an effort to join the CCP and, in the process, subjecting one's self to a greater degree of political scrutiny and responsibility, are part of the investment in political capital. Since the CCP follows the constitution of the Party (CCP National Congress 2002), recruiting members who play an 'exemplary and vanguard role' in production and social activities, the people generally devote resources towards the goal of being admitted into the Party, in much the same way that people in the West take certain actions to be admitted into a selective college or university. It is anticipated that the investment on political capital would be paid off. Higher return in the labor market could be one of ways in which it is compensated.

Liu (2003) empirically explored the relative importance of human capital and political capital in the labor market of urban China by using the CHIP 1988 survey data. Based on the sample of household heads who held full-time jobs, Liu (2003) first split this into Party members and other heads. OLS estimates in two separate regressions show that the differences in the rates of return to human capital are not statistically significant between Party members and other heads. Liu (2003) further restricts the heads' sample to Father-Child pairs to study the determination of Party membership attainment. The logistic regression of Party membership finds that human capital does not play a significant role in determining investment in political capital. Liu (2003) concludes that human capital and political capital appear to be neither substitutes nor complements. However, the estimates from the sample of Father-Child pairs indicate that if a worker's father holds CCP membership, as a proxy variable for political-capital endowment from the older generation, is a crucial factor in the child's attainment of political-capital; political-capital endowment proves to be a more important influence than either parental

income or education. In contrast, Liu (2003) finds that parental income plays a key role in determining children's educational attainment. Other empirical results show that both human capital and political capital have positive and significant effects on the heads' earnings and household income, as well as on the welfare of the family[15]. CCP membership is estimated to increase the head's earning by 4.29%, after controlling for the occupations and ownership of employment. The disposable income per person is higher among the families headed by CCP members by 3.5%, than in the households headed by NonCCP workers. CCP membership has a positive effect on the welfare of the family in monetary and non-monetary terms as well. CCP members receive, on average, 4.4% more housing subsidy than NonCCP members do, and they are more likely to possess private sanitary facilities, a private kitchen, and a telephone. Dickson and Rublee (2000) and Liu (2003) only use 1988 CHIP data, so there is no more room to study the possible change in the returns to the political capital and human capital in the more recent reform era.

2.3 Screening and Rent Seeking

Bishop and Liu (2008) use urban CHIP data in 1988 and 1995 to test the hypothesis that the Party successfully supplements (after economic reform) education as a way to screen for ability, commitment, and quality in the labor market. The evidence of a large Party premium for less well-educated workers supports their hypothesis. They examine if the CCP premium of males and females varies with schooling level,[16] respectively, and compare the CCP premium at each educational level to a potential earning gain if they have a higher education. Interestingly, they find that higher education would make high school graduates earn more than if they have a CCP membership. This phenomenon happens because the lowest educated CCP members accrue the highest CCP premiums. Specifically, in 1988 and 1995, they find that it is much more valuable for a low educated male worker (primary school graduates and junior high school graduates) to join the

[15] Liu (2003) computed the implicit dollar amount of in-kind housing subsidies. It is equal to the market rental value of the lodgings minus the net rental payment made by the head of the household.
[16] Cadre defined in Bishop and Liu (2008) includes those who are responsible officials of government or institutions in the 1998 data code book, and those who are cadre and work for the government, party organs and, organizations in 1995.

CCP, as opposed to increasing their schooling levels. However, a high school male graduate is better advised to continue his education than join the CCP.

For females in 1988, returns to CCP membership are higher than for education. Females' education and the CCP premium are both larger than their male counterparts. But, in 1995, higher education brings up more benefits for primary school female graduates and high school female graduates than does joining the CCP, but junior high school graduates are even better off as a result of joining the CCP. Females' education premiums are greater than males in 1995 as well. For example, an earning premium for primary school females with CCP membership is 21.4% while it is only 9.5% for primary school males in 1988. For both genders, the CCP and education premiums skyrocket in 1995. It is not hard to understand that, to maintain its political power, the Party adjusted its recruitment strategy to allow more educated candidates to join the Party. By doing so, it tried to adapt to the new economic environment that its reforms were creating. Although the Party still follows the constitution of the Party (CCP National Congress 2002), in recruiting the members who play an 'exemplary and vanguard role' in production and social activities, the definition of this example proves quite different during the reform era than it did during the revolution era. Since the description of the ideal worker includes the characteristics of being highly motivated, well-educated, and productive, these have become important criteria in the recruitment[17], and we would expect a certain screening effect to be associated with Party membership. However, given the different labor allocation and wage determination systems in the SOS and the NSOS, I will discuss in this dissertation whether such a screening effect had occurred in both the SOS and the NSOS and whether two decades of economic reform has had a different impacts on the screening effects in each sector.

There is another argument that the reforms in the labor market created the opportunities for CCP members to translate political power directly into higher labor market earnings. Especially since the Deng Xiaoping's southern tour speaking, the policy has allowed for economic inequality on the premise that an "advanced and richer region could help a less advanced and poorer region and both could get rich together

[17] Entrepreneurs and skilled expertise have been allowed to join the CCP since July 2001.

later." Economic development not only influences people's ideologies, but also induces the CCP to adjust itself to adapt to this new environment. Public concern rises with the general corruption of those with strong political capital. Given the difficulties in fully measuring the degree of general corruption in terms of wages or salaries, it is only feasible to discuss whether rent seeking exists if CCP membership is used as a device to confer benefits for favored groups (Schnytzer and Susteric 1998). Liu and Bishop (2008) particularly examined the earnings of Party officials (Cadre) and their spouses in the 1988 and 1995 CHIP, and they found the existence of rent-seeking particularly in 1995.

Liu and Bishop (2008) restrict the sample to matched pairs of working husbands and wives. To address rent seeking questions, they test whether direct economic benefits flow to all CCP members, or mostly to Party officials (cadres), and whether Party members indirectly benefit through higher wages being paid to their spouses. They interpret either rising premiums to cadres or rising spouse premiums as evidence of rent-seeking. They did find a rising premium to cadres from 1998 to 1995, but little changes in spousal premiums. There is little economic benefit for either CCP membership or Party officials (cadres) in 1988 when the wages were still set by a strict formula. Male CCP members earned only 4% more on average than Non-CCP members, while females' CCP premium was three times the size of those received by males. In contrast to the findings of Morduch and Sicular (2000) in rural China[18], they found no statistically significant earning advantages for male and female cadres in urban China in 1988. Male cadre members earned only 2 Yuan more than rank-and-file Party members on average. The evidence shows little benefits acquired through the membership of the spouses in 1988. If a female spouse was a CCP member, then the husband earns about 4% more in 1988; by contrast, female head of households do not benefit from their spouses' memberships statistically.

However, the answers change in 1995. Both sexes received similar sized premiums. The male Party premium has become threefold as a result of recent labor market liberalizations. Cadre premiums rose to 6% for males and 15% for females in 1995. But spouse premiums for male and female heads of household rose only slightly (only 3%).

[18] Morduch and Sicular (2000) use 4-year longitudinal household data set (1990 – 1993).

They view the rising premiums to cadre and spouses of Party members as indicative of rent-seeking. Comparing the results in 1988 to 1995, they show that the earnings benefit became more dependent on political status and education in 1995 than in 1988. This might mean that liberalization brings not only greater labor market rent-seeking but also a greater capacity to earn wages that reflect one's ability.

2.4 Supply Determined or Demand Determined

Appleton et al. (2006)[19] examine whether membership is primarily determined by individuals' demand or the CCP's screening by using CHIP data in 1988, 1995, and 1999. They argue that coexisting rising wage premiums of CCP members and rising CCP membership recruitments are consistent with a so-called 'demand-determined' membership hypothesis if costs of memberships to individuals are heterogeneous. However, most findings in their cross-sections show that some worker characteristics that increase the probability of being a Party member decrease the wage premium of membership. These findings suggest that membership is primarily determined by the CCP screening rather than by individual demand for the membership. In response to the question of whether membership is primarily determined by individuals' demand or the CCP's screening, they tend to answer it by analyzing the correlation between the coefficient of determinants of CCP membership and the difference in the coefficients of determinants of the CCP members' wage equation and the NonCCP members' wage equation. A positive correlation indicates Party membership is demand-determined while a negative correlation indicates CCP being selection-dominant. Empirically, they used a binary probit model for CCP membership and obtain the predicted probability of being a CCP member by altering a given explanatory variable while taking the mean value of all other variables. They find a higher probability of membership being associated with the characteristics of being male, white collar, having longer working experience and a higher educational attainment. They obtain a rising predicated probability of membership in the private sector from 1988 to 1999, 1% to 7%. Compared to the continuous high probability of membership (16% to 23%) in SOEs in three years, a much smaller

[19] Appleton et al. (2006) is a working paper, which was further revised and published in 2009.

probability in the private sector indicates that recruitment there may be more difficult and offer lower benefits for members.

The predicted wage premium of CCP members over other workers is calculated from two wage equations, one for CCP members and the other for other workers. To make a comparison, the wage premium is also evaluated in an analogous way. They found that some worker characteristics, such as being male, white collar, longer working experience, and higher educational attainment, raise the likelihood of a worker being in the CCP but reduce the wage premium for membership. They view it as evidence to support their CCP screening hypothesis.

But there is no clear pattern of a correlation for employment in the SOE although it has a higher probability of membership than that of the private enterprises. Most researchers agree that the political implications of the growing benefits for CCP members are considered to be desirable because they help to ensure that the reforms are self-sustaining. In recent economic reform, the greater managerial autonomy built in the SOE, coupled with competition from an expansion of the NSOS, is expected to lead to a more productive-related wage setting rather than a political-loyalty dominant wage system in the SOS. However, in order to secure high returns for CCP members, Party membership could still play a role in the rewards system of the SOS. As far as the NSOS is concerned, the existence of a Party premium in the NSOS could be due to either a signaling effect of Party membership. Additionally, economic reform in the second decade allowed for further labor mobility between the SOS and the NSOS in comparison with the first decade. Coupled with severe competition in the labor market[20], individuals' decision of political capital investment and choice of ownership sector are expected to be closely related to their expected earnings. This dissertation will comprehensively examine how selection effects influence workers' economic returns and how Party premium vary by ownership sectors.

[20] In urban China, the registered unemployment rate was 2.9%, but the real unemployment rate was 4.8% in 1995. The real unemployment rate rose dramatically to a peak in 1997 and 1998 at 9%, and then gradually dropped to 7% by 2003. Source: Lee and Warner (2007)

2.5 CCP Members in Different Ownership Structures

Meng (2000) compares the impact of three ownership structures, SOEs, Urban Collective Enterprises (UCEs) and private enterprises, based on the firms' average labor compensation level in 1985, 1990, 1991 and 1992. The findings show that workers in private enterprises had the highest income. The labor compensation in SOEs and UCEs are heavily determined by retained profits per labor while in the private sector, labor compensation is determined by productivity – value added per labor.

The earning structures are expected to be different across different forms of ownership, as are the economic returns to CCP membership. Lam (2003) looks into the Party premium by gender in SOEs, collective enterprises, and private enterprises. He uses 1996 survey data in Shanghai collected by the Institute of Economics, Shanghai Academy of Social Science. He finds that there are significant economic advantages for male CCP members in SOEs (8.6%) and collective enterprises (12.5%), but none in private enterprises. The partial earning advantage of male CCP members in the SOE becomes possible through their attainment of high-paid government jobs. Although CCP membership did not directly affect the women's net earnings at all, it contributes indirectly by increasing their probability of attaining professional jobs in collective sectors. He also finds that both a father's political capital[21] and own years of schooling contribute to the attainment of CCP membership and government jobs for male workers in the SOE in China, but they don't contribute to the attainment of CCP membership for female workers in any ownership form. His findings only provide a limited picture of the Party premium across ownership sectors in one city, Shanghai in urban China. This dissertation has a much broader view of urban China in three years.

2.6 Endogeneity of Party Membership

Geishecker and Haisken-DeNew (2004) and Gerber (2000), using Russian data, and Li et al. (2007), using a sample of Chinese twins, all find that the observed return to Party membership can be explained by unobserved productivity characteristics. CCP membership may be correlated with the effects of unobserved ability or family

[21] Liu (2003) uses a father's political capital status as a proxy for political-capital endowment. The empirical results show that it is an important determinant of his children's educational attainment.

background, which could bias the OLS estimates of the effect of the CCP membership on earnings. Li et al. (2007) find important evidence that OLS estimates of the returns to CCP membership is biased upward. They use a unique twins data set collected in 5 cities in urban China by the Urban Survey Unit of NBS in June and July in 2002. To control for the effects of omitted ability and family background, they follow Ashenfelter and Krueger (1994) to apply GLS estimator by using the SURE model. They also use within-twin-pair fixed effects estimator based on the first difference between twins.

Their OLS estimate shows a 10% Party premium, while within-twin-pair estimation brings it down to almost zero. GLS estimate of Party effect is consistent with FE estimate, showing quite small (non-significant) pure Party effects but large effect of omitted ability and family background. They conduct a series of robust sensitivity on omitted variable biases, measurement errors and within-family externality. They follow Ashenfelter and Rouse (1998) and conduct a correlation analysis. The testing results help them to conclude that zero within-twin-pair estimation can tighten the upper bound of the return to Party membership in the absence of within-family externality. Meanwhile, they test if the positive within-family externality does exist, and then fixed effect estimator might underestimate the true returns to Party membership. The findings on the sibling effect from both the twins and non-twins sample indicate that co-twin sibling's Party membership has mainly picked up the effects of unobserved high ability rather than within family externality. These interpretations suggest that OLS estimate of Party effect is biased up because of omitted ability and the Party members fare well not because of their political status but because of the superior ability. They do not have a good instrumental variable to deal with the potential measurement error and simultaneity problem directly, but they follow the formula in Freeman (1984) to examine the relative bias of the FE estimate versus the OLS estimate. They did not find that measurement error is a serious problem in their data.

Another concern is simultaneity. It occurs if those with higher earnings are more likely to join (or to be selected by) the Party. Without specific testing, Li et al. (2007) argue that the zero within-twin-pair FE estimate suggests that if simultaneity causes any upward bias it would not be very important. To address a potential endogeneity bias in the estimates, Liu (2003) uses CHIP 1988 and generated a subsample of father-child pairs

who held full-time jobs. The father's Party membership status and the father's education were used as key instruments of political capital endowment to obtain a 2SLS estimate. But, contradictory to the findings in Li et al. (2007), he finds that accounting for endogeneity of 'CCP membership' raises the impact of the political capital on the earnings by about 4 times compared with the OLS estimate. The estimated impact of CCP membership on the earnings of young adult workers increases from 11% based on the OLS estimate, to 43% based on the 2SLS estimates. The logistic regression of CCP membership attainment shows that the political endowment of the family, rather than parental income or education, is an important determinant of CCP membership.

Lam (2003)[22] use whether the father was a CCP member to identify the impact of Party membership and find no evidence of a selectivity bias in OLS estimates. She applies the Heckman model to correct for selection but it is generally hard to find convincing identifying variables for Party membership and the result shows insignificant selectivity bias.

Similarly to this finding, Appleton et al. (2009) do not find selectivity to be a serious problem. They find a rising wage gap between CCP members and other workers from 29% in the 1988 CHIP to 33% in the 1995 and 1999 CHIP. Based on OLS estimates, an average worker would have earned 10% more in 1988 if he was a CCP member, rising to 14% in 1995 and 1999. Since they interpreted two separate wage functions for members and nonmembers, respectively, and then predicted wage premiums, they did explain why sample selectivity does not appear to be a significant problem in most cases and they could rely on OLS estimates in the two equations. There is no evidence that the rising wage premium for Party members is due to an increase in the average ability of members or an increase in the returns to ability.

They use parental Party status in the 1999 CHIP data as an instrument to construct sample selection correction terms in each equation. But they are all statistically insignificant. In 1988 and 1995, they use a subsample of households containing parent-child pairs of workers and employ the parental membership as an instrument for own membership. Sample selection terms appear to be insignificant in most cases of 1988 and

[22] Lam (2003) is a working paper. It is short of description of how the author did sample selection correction.

1995, with the exception of non-members in 1988. Their findings alleviate their concerns of biasness of OLS estimates in separating wage equations.

Alternatively, in order to better control for the endogeneity of membership in the cross-sectional approach, they constructed a retrospective panel data from 1995 to 1999 based on recalled wages of more than six thousand responders in the 1999 CHIP. Since they had additional 503 households who had experienced retrenchment since 1994 included in CHIP 1999 data[23], they obtained fixed effects estimates for two groups of workers: retrenched workers and non-retrenched workers[24], respectively. The model includes interaction terms of Party membership with year dummies in both groups and interaction terms of Party membership with reemployment dummy which is time varying in the group of retrenched workers. However, CHIP 1999 does not contain the information when the respondents joined the CCP and has very limited time-variant variables in the data. Therefore, they were only able to investigate how the wages of CCP members in 1999 in each group had changed during the years between 1995 and1999, compared to other workers in 1999. They found that the rising CCP-NonCCP wage premium of non-trenched workers exists even after controlling for the unobserved time invariant individual characteristics during the period, but it does not hold among retrenched workers. Among retrenched workers, those CCP members in 1999 who had been retrenched were not rewarded better than other retrenched workers. However, the predicted wage of these CCP members if they got reemployed was less than if they remained in their old job. These findings suggest that the wage premium of Party membership 'was tied to the jobs that they held in 1995 and do not survive retrenchment and reemployment'. They concluded that the rising premium was neither due to an increase in the unobserved productivity of CCP members nor due to an increase in the returns to ability. It might be 'a by-product of the general increase in wage differentials during the transaction from planning' or indicate 'a limitation in the extent to which the Chinese labor market has become competitive.'

[23] The owner of CHIP data did not provide me this additional group, so the CHIP data in this dissertation does not contain it.

[24] Retrenched workers are defined if they were retrenched at any time between 1992 and 1999/2000. It is time-invariant.

2.7 Other Studies on Economic Returns to CCP Membership

Walder (1995) found no significant effect of CCP membership on either income or becoming a professional in urban Tianjin in 1983. He used data from a 1986 survey of a multistage stratified random sample of 1,011 households. But, the sample was drawn only in the urban districts of Tianjin and the wage-earner in each household whose birth date was closest to October 1 was interviewed. Li et al. (2007) tested the hypothesis that Party members in the older generation have a higher unobserved ability than non-Party members. They included interaction of the Party membership and age in OLS and FE estimations, respectively. The Party effect in OLS regression increases with age and the Party membership has a positive effect for those older than 29. But, in contrast, both the Party effect and the interaction effect are gone in FE estimation. They argue that if the Culture Revolution during 1966-1976 interrupted the education and job career of many Urban Chinese who were born between 1950 and 1968, education and job experience may not fully pick up the ability of these people.

Dow and Jhee (2005) analyze monthly per capita household income by using the 1988 and 1995 CHIP rural and urban survey data. The income gap between the households with at least one CCP member and other houses was larger for rural households than urban households in 1988 and 1995. At an overall level, the income gap increased from 33.8% in 1988 to 57% in 1995. They applied the Oaxaca (1973) discrimination methodology to decompose the difference in monthly per capita household income between CCP households and other households. They found a 24% income premium to CCP-households in 1988 due to the market discrimination, but that it decreased to less than 17% in 1995[25]. A narrower range of coefficient differentials in 1995 indicates that a labor market rewards CCP members in a more similar way to the general public. As the labor market is allowed to be tied more to workers' productivity and human capital, the general public has more incentive to pursue higher education. But, the compensation system in the labor market between rural and urban China is different, it would be better to conduct a separate analysis.

[25] Dow and Jhee (2005) is a working paper and does not provide the tables for the decomposition results.

Chapter 3

Selection Process for Membership in the Communist Party

In Chapter 2, I presented findings in current empirical studies that are relevant to economic returns to Party membership in China. Most studies treat Party membership as a type of political capital in the study of the earning equation in China. Some of them examined the determinants of Party membership and compared the return to membership to human capital; others provided important information to the trend of change in returns to political capital. But only a few studied the returns across different ownership sectors. Since ownership sectors are crucial for potential variations in earnings, the findings of such a study would provide implications about whether the reform policy on ownership affects the decision of political investment and economic outcomes.

This chapter starts with a brief discussion of the selection process for Party membership in China. Being a CCP member is different from being a member of a political Party in the U.S.A. In the United Stated of America, because parties compete against each other for power, financial support and personnel in political competition, they are more open to recruiting new members. Individuals' political investments are driven by their personal preferences and ideological loyalties. Membership is not likely to have an influence on one's career or economic circumstances. However, in China, the CCP has a monopoly on political power and plays a key role in administering the economy. In order to secure its monopolistic position, it becomes very important to maintain the loyalty of membership via a relatively strict selection procedure.

When submitting a formal application to a CCP branch in their school or work unit, any adult individual (18 years of age or older) could express their desire to become a CCP member. The applicants must declare loyalty to the CCP and actively participate in political activities, including lectures conducted by the CCP branch secretary, off-work sessions to study the CCP constitution, and current policies. Some activities are voluntary, including community service organized by the Party. Regular reports and self-assessment are required by CCP branch authority to record the activists' performances. Each applicant is assigned two CCP member liaisons who regularly report to the CCP branch

authority about their observations and evaluations of the application's progress towards the standards of CCP membership.

The applicant is generally monitored for at least three years, during which time they must make a consistent effort to meet all of the CCP standards. When the CCP branch believes that it is time to make a more thorough evaluation, usually about two years after the application has been initiated, it comprehensively examines the applicant's political performance, personal, and parental histories, and kinship and marriage connections. Then the applicant is given a closed-door evaluation meeting that involves all of the CCP members in the branch and the applicant's co-workers who are not CCP members. Any serious doubt on the part of either a non-Party co-worker or a Party member could mean failure, and that the applicant needs to improve before being considered for another closed-door evaluation. If the potential candidate receives sufficient support during the closed-door evaluation, he or she will become a one-year probationary CCP member. Probationary CCP members are still closely monitored by the CCP branch before becoming formal Party members. The current constitution of the CCP requires the Party members (especially the Party cadres) to possess both political integrity and professional competence and play an exemplary and vanguard role in work, product, study and social activities. The strict selection process allows the Party to better collect tangible and intangible information on the candidates not only through the observance of their performance, self-evaluation and objective evaluation by others, but also through their self-report on what they learn, what they think about the Communist ideology and what they can do to serve the people. By doing so, the Party is able to make a judgment on their political loyalty, communist consciousness and professional competence. In a word, the whole process serves to select people who possess political capital, but also serves to select people who have productive skills no matter what ownership form of their work unit is.

The strict selection process for CCP membership also changes with some particular criteria of recruitment emphasized by the CCP over time. In the revolutionary period prior to 1949, revolutionary ideals and loyalty to the CCP were the most important qualities; in the planning period between 1950 and 1978, class background, including parental membership, became the first criterion. Before the Cultural Revolution,

professional competence rose in importance so that exemplary workers were often targeted for recruitment. During the ten years' Cultural Revolution, intellectuals were the group most excluded. Since 1978, when the market reforms set economic growth as the first target, the CCP started to recruit more educated applicants. By the 15th Party Congress in 1997, the percentage of Party members with a senior high school or better education was 43.4%, up from 12.8% in 1978; in addition, 92% of the central committee members had at least some college education (Dickson (2003)). Although it is hard to examine whether the CCP abandoned or started to abandon its core beliefs when exposed to the market reform in this study, we can observe an remarkable increase in membership as the CCP has loosened its control for the economy gradually during the market-oriented transition, from having 3.8% of China's population in 1978 to 5.2% in 2002 when it reached 66.4 million strong (Song and Appleton, 2006). To develop productive forces, the Party explores its own way to make changes during twenty years' economic transaction. It is not surprising to assume that traditional Communist ideology has been greatly challenged by some policies of economic reforms. For example, Deng Xiaoping's administration proposed the policy of "allowing some to get rick earlier' on the premise that "advanced and richer region could help less advanced and poorer region and both get rich together later". Its 'open-up' policy made significant contributions to economic growth in China. But it also raised the question to the Party how to preserve the ideological unity of CCP. Morduch and Sicular (2000) explained the economic reform in rural China as being "incentive-compatible" reform, since the government needs CCP members' corporation to accomplish economic reform. One of the most effective ways is to allow them to enjoy more monetary gain over other workers. If so, comparing to the ideological fever during pre-reform period (especially during Culture Revolution), the value of Party card is more likely to be measured by a monetary term rather than ideological term within reform era. If the perception that membership signaling ability as education does in the labor market and would be associated with monetary rewards prevails along the economic reform, the incentives to join the Party will be not only subject to ideological beliefs, but also (or more likely) to economic cost and benefit associated with their rational choices within reform era. Given the process of getting the membership within economic reform era, the Party membership is modeled as a choice

variable in the following chapter. It is considered as a general equilibrium between supply and demand in a reduced model. I also examine how CCP members are rewarded in urban China over time and how it differs across different ownership sectors in Chapter 6.

Chapter 4

Theory Discussion and Econometric Model

4.1 Theory Discussion

Liu (2003) and Appleton et al. (2009) discussed an existence of market for Party membership. Anyone who is 18 eighteen years old and not a political offender is eligible to apply for Party membership. In a market economy, the CCP actively seeks new recruits and many people actively compete for membership at the same time. Liu (2003) argues that since joining the CCP is a voluntary process, people who join the Party can be assumed to expect to gain utility. The costs of making the choice to join the Party are mainly nonmonetary. For example, applicants to the CCP have to invest time and effort in studying the doctrine of the CCP, behave according to the code of the Party, and meet the Party's standards for political trustworthiness. The benefits of joining the Party include pecuniary gains, and non-pecuniary gains, such as better career prospects and improved social status. In theoretical discussion of Liu (2003), income and the effort devoted to join the Party are included in the utility function. He assumes a positive correlation between income and expected utility of joining the Party, while he posits a negative one between efforts and utility. People will pursue Party membership if, and only if, the net gain in utility is positive. In this dissertation, I discuss how workers are sorted into four groups based on their personal choices of Party membership and ownership structure of work unit. Government agents and all SOEs are classified into the SOS, while urban collective enterprises, urban private enterprises, and foreign-owned enterprises are grouped into the NSOS. SOEs are owned by and under the direct authority of the central or provincial government. Workers in the SOS are broken down into CCP/SOS and NonCCP/SOS categories based on their Party membership affiliation. Similarly, the CCP/NSOS category includes Party members in the NSOS, while other workers in the NSOS are grouped into the NonCCP/NSOS category. Given these four choices in the labor market, I assume workers select the one which gives them the largest expected utility gain. For example, workers self-select themselves into the CCP/SOS category if, and only if, their utility gain from this choice is expected to be greater than

that of their other choices. People measure the expected utility gain differently, mostly depending on their preferences, willingness, and characteristics. For those who wish to be appointed to prominent positions in the administrative ranks in government agencies, Party membership is a must. Meanwhile, there is no doubt that the Party card screens political skills, although we are not sure if it represents productive skills as well. In the SOEs, it generally plays an important role in the competition of recruitment and promotions if all other abilities of candidates are the same. People usually expect a higher income and utility gain in the SOS if they join the Party. In contrast, the NSOS is tied to the market and the returns are determined by productivity. If Party membership is a proxy for political skills only, it would not be rewarded (or even worse) in the NSOS. If it represents both political and productive skills, then it is reasonable to treat Party membership as a screening factor in the labor market, and expect that the Party card is associated with a higher income in the NSOS as well. If the SOS compensates the productivity in a same way as what the NSOS does, then CCP members are expected to be rewarded more in the SOS than in the NSOS. However, the reforms in the SOS did not make it fully privatized, there is no a clear consensus how the SOS compensates CCP members differently from the NSOS, but I would expect smaller difference across sectors over time. Jefferson and Singh (1999) found that wages in SOEs and UCEs became more associated with labor productivity and bonuses were more driven by profits. In most of the existing literature, it is assumed that the efforts to join the Party are the same across the ownership sectors. However, the effort to join the Party and the expected utility gain of joining the Party could differ across sectors. As a source of new jobs and economic growth, the NSOS represents a new productive force but not all the firms in the NSOS have Party organizations, especially privately-owned or foreign-funded enterprises during the early stage of economic reform. Dickson (2003) finds that “the new collectively and privately owned and foreign-funded enterprises as being created so fast that the Party cannot create organizations within most of them, and many of them do not even have Party members in them.” In a special economic zone, Shenzhen, he found that only 17 of more than 13,000 private enterprises had basic level Party organizations, and less than 1 percent of workers in private enterprises were Party members during the 1990s (Dickson 2003). Since there are not as many Party organizations embedded in the NSOS as those in

the SOS, workers with a willingness to join the Party in these enterprises have to make more effort to figure out if there is a Party organization in their work place first and then seek out local Party organizations or other local organization, such as Federation of Industry and Commerce to process their applications[26]. The needs to seek out the Party organizations to submit the applications offset their expected utility of joining the CCP. But during the years that have been studied in this dissertation, CCP had speed up to forge the relationship to the NSOS and facilitate their applications. For example, Party organization had been also set up in certain joint-ventured enterprises by 1991 (Dickson 2003).

As a major component of the NSOS in urban China, UCEs, which are usually owned collectively by workers and other economic entities such as a city or a district authority, are more likely to have a Party organization than other firms in the NSOS. Since 1979 the government has diversified the types of UCEs in order to alleviate serious urban unemployment. UCEs employed educated urban youths and contributed 26.5 million employment positions, which was 31% of the total employment in the SOS in the early 1980s. UCEs developed rapidly in various types, including urban 'large collectives' (dajiti), urban 'small collectives' (xiaojiti) and urban neighborhood cooperatives in the 1980s (Guo 1998). Urban 'large collectives' are affiliated with a district government under a municipality or a county, while 'small collectives' and cooperatives are affiliated with a neighborhood (the grassroots organizational government in urban areas). The Party organizational system remains effective in most UCEs and the Party recruits pioneer vanguard there. Since the shareholding reform in 1992, many UCEs were re-organized and registered as shareholding companies or private firms in the 1990s. Meanwhile, the launch of restructuring SOEs national-widely also regrouped numerous SOEs into the NSOS in terms of various ownerships, which diversified the composition of the NSOS and created organizations to link the state and the NSOS. Additionally, with more Party organizations been also set up in the NSOS in the 1990s, it is not surprising to see various sources for Party members in the NSOS: some Party members were recruited by the Party organs in the NSOS, some were already Party members in school before they

[26] Before 2001, the party even set up a ban on admitting owners of private firms into the party, which makes party building in the NSOS slower and more difficult.

worked in the NSOS or in the SOS before SOEs were reorganized to the NSOS, some Party members left the SOS and 'plunged into the sea' (Xiahai) to be entrepreneurs in the NSOS[27] and some Party members were reemployed by the firms in the NSOS after they were laid off in SOEs[28]. The Party has tried to increase their connections in the NSOS, especially after 1992 because the rapid development of the NSOS created incentives to meet the demand and supply of Party membership in this sector. The people who self-select into private enterprises and joint ventures as prospective managers are innovative and productive, and are also attractive to the Party as potential vanguards and models in leading the masses along the path of economic reform. Local Party committees actively found ways to cooperate with private entrepreneurs to enhance the local economy before the ban on private entrepreneurs was lifted in 2001. Shenzhen even created special Party branches for entrepreneurs who joined the Party (Dickson 2003). Entrepreneurs in the NSOS also sought out a close relationship with the Party in order to gain access to the resources controlled by the Party. Although there are not as many Party organizations in the NSOS as in the SOS, I would expect a change to exist between the two sectors, in the relative efforts that workers made to join the Party, especially as the economic reform proceeded from its second decade to its third decade.

Given the above comparison of the benefits and the cost of joining the Party between the SOS and the NSOS, I would expect politically ambitious workers to be more likely to self-select in the CCP/SOS category, and more risk-avoiders and stable-work seekers to fall into the NCCP/SOS category, while innovators would be more likely to be in the CCP/NSOS. The least politically ambitious workers would choose to be in the NCCP/NSOS. For example, people who prefer to have a job in the SOS are more likely to self-select to join the Party, although not everyone who applies for Party membership in the SOS will finally be approved, due to the selection process of the CCP. If the distinct characteristics of CCP workers in the SOS, which make them better suited for the requirements of the Party and SOS, enable them to earn more, then it is necessary to control for selection effects in the earning equation.

[27] Since 1992, the party has encouraged its members to plunge into the sea of private enterprises, known as *Xiahai*. *Xiahai* entrepreneurs are found to be older and better educated than Non-party members.
[28] The policy of restructuring SOEs has been a nation-wide implementation since 1995.

This dissertation examines how the characteristics of workers are different in four categories, how they are different in affecting the probability of each choice, how their earnings vary depending on Party membership in each sector, and how the impact of human capital on earnings varies with alternative choices. Additionally, selection correction terms are controlled in each earning equation to investigate potential selection effects. In the following sector, I describe an econometric model applied to control for selection bias in earning equations.

4.2 Econometric Model

A potential empirical problem in most existing studies on the earning determination in China is the selectivity bias due to the assumption of exogenous ownership sector choice and CCP membership affiliation. I assume that each worker faces four choices, delineated by investment on the political capital and their sector status: the CCP/SOS, the NonCCP /SOS, the CPP/NSOS, and the NonCCP/NSOS. I adopt Lee's (1983) Mlogit-OLS two-stage estimation procedure. It allows us to study polychotomous choice problems with mixed continuous and discrete dependent variables. Rational individuals target to maximize their utility and their willingness to choose different statuses, depending on the order of utility provided by the different choices. Let V_{ij} be the maximum attainable utility of worker i if he chooses the choice j. Following Trost and Lee (1984), we assume that this indirect utility function is a linear function of a vector of exogenous variables.

$$V_{ij} = \gamma_j' Z_i + u_{ij} \quad (1)$$

where,

$i = 1,2,\ldots,N$ individuals;

$j = 1,2,\ldots,M$ types of choices that each individual faces;

$Z_i =$ a vector of exogenous individual characteristics affecting the selection;

$\gamma_j' =$ a vector of unknown utility parameters for status j;

$u_{ij} =$ a disturbance term with a zero population mean and constant variance;

The earning equation is given by

$$Y_{ij} = \beta_j' x_i + \varepsilon_{ij} \quad (2)$$

Where, Y_{ij} = natural logarithm of annual earnings;

x_i = a vector of exogenous individual characteristics determining the annual earnings.

β_j' = a vector of status-specific annual earnings parameters;

$\varepsilon_{ij} \sim N(0, \sigma_j^2)$

Following Gyourko and Tracy (1988), we define an indicator variable

$I_i = j$ IFF individual i chooses the status $j,\ j = 1,2,\ldots,M$

And the choice depends on the maximized utility, which is

$$I_i = j \quad IFF \quad V_{ij} > \max_{k \neq j} V_{ik} \quad (3)$$

Following Trost and Lee (1984), we define

$$\omega_{ij} = \max_{k=1,\ldots,M} (\gamma_k' Z_i + u_{ik}) - u_{ij}, \quad where\ k \neq j \qquad (4)$$

Combining (1), (3) and (4) we obtain

$$I_i = j \quad IFF \quad \omega_{ij} < \gamma_j' Z_i \qquad (5)$$

An worker i is expected to select alternative j if $\max_{k=1,\ldots,M} (\gamma_k' Z_i + u_{ik}) - u_{ij} < \gamma_j' Z_i$. A high value of uij makes this selection more likely by reducing the value of ω_{ij}. This may come via wages, i.e., a higher value of uij could be from a higher value of ε_{ij}. Assume the disturbance u_{ij} are independently and identically Gumbel distributed, and the corresponding cumulative and density functions are

$$G(u_{ij}) = \exp(-\exp(-u_{ij}))$$

$$g(u_{ij}) = \exp(-u_{ij} - \exp(-u_{ij}))$$

Then the choice model can be estimated as a multinomial logit model

$$\Pr(I_i = j) = \Pr(\omega_{ij} < \gamma_j' Z_i) = F(\gamma_j' Z_i) = \frac{\exp(\gamma_j' Z_i)}{\sum_{j=1}^{M} \exp(\gamma_j' Z_i)} \qquad (6)$$

Since the observations in each status choice are restricted to those who choose this status, then the conditional annual earnings in individual desired status becomes:

$$E[Y_{ij} | I_i = j] = E[Y_{ij} | \omega_{ij} < \gamma_j' Z_i] = \beta_j' X_i + E[\varepsilon_{ij} | \omega_{ij} < \gamma_j' Z_i] \quad (7)$$

If ω_{ij} has a direct impact on earnings, which is indicated by $E\left[\varepsilon_{ij}\middle|\omega_{ij} < \gamma_j'Z_i\right] \neq 0$, and were we to simply estimate earning equations on a random sample of individuals partitioned by the choices, then OLS estimates would be biased because of nonrandom selection. To correct the selectivity bias, ε_{ij} and ω_{ij} are assumed to be joint normally distributed (Heckman 1974). A two-step selection correction procedure can be used by transforming ω_{ij} into a standard normal random variable (Lee, 1983; Gyourko and Tracy, 1988).

$$\omega_{ij}^{*} = \Phi^{-1}\left[F(\gamma_j'Z_i)\right] \quad (8)$$

where Φ denotes the cumulative distribution function (cdf) of the standard univariate normal distribution. And

$$\omega_{ij} < \gamma_j'Z_i \quad IFF \quad \omega_{ij}^{*} < \Phi^{-1}\left[F(\gamma_j'Z_i)\right]$$

which indicates that

$$I_i = j \quad IFF \quad \omega_{ij}^{*} < \Phi^{-1}\left[F(\gamma_j'Z_i)\right] \quad (9)$$

And given $E\left[\varepsilon_{ij} \mid \omega_{ij} < \gamma_j'Z\right] = \sigma_{\omega\varepsilon} E\left[\omega_{ij} \mid \omega_{ij} < \gamma_j'Z\right]$ (Cameron and Trivedi, 2005), the conditional earning can be obtained by using a standard approach as following

$$\begin{aligned} E\left[Y_{ij}\middle|I_i = j\right] &= E\left[Y_{ij}\middle|\omega_{ij} < \gamma_j'Z_i\right] = \beta_j'X_i + E\left[\varepsilon_{ij}\middle|\omega_{ij}^{*} < \Phi^{-1}\left[F(\gamma_j'Z_i)\right]\right] \\ &= \beta_j'X_i - \sigma_{\omega\varepsilon}\left[\frac{\phi\left\{\Phi^{-1}\left[F(\gamma_j'Z_i)\right]\right\}}{F(\gamma_j'Z_i)}\right] \end{aligned} \quad (10)$$

where ϕ denotes the probability density function (pdf) of the standard univariate normal distribution. $\sigma_{\omega\varepsilon}$ is covariance between ω_{ij} and ε_{ij}. [29]

Therefore, a two-step procedure to consistently estimate β_j in the earning equations requires, first, that we apply the multinomial logit maximum likelihood method in the polychotomous choice equation to obtain γ_j and construct the selectivity correction terms called inverse Mills ratio for each status choice.

$$\hat{\lambda}_{ij} = -\frac{\phi\left\{\Phi^{-1}\left[F(\gamma_j'Z_i)\right]\right\}}{F(\gamma_j'Z_i)}, \quad \text{where } F(\gamma_j'Z_i) = \frac{\exp(\gamma_j'Z_i)}{\sum_{j=1}^{M}\exp(\gamma_j'Z_i)} \quad (11)$$

[29] Derivation is provided in Appendix E.

Second, the selectivity correction terms are included in the earnings equation for each individual and run separate ordinary least squares (OLS) earning equations for individuals who fall into different categories

$$Y_{ij} = X_i^{'}\beta_j + \sigma_j \rho_j \hat{\lambda}_{ij} + v_{ij} = X_i^{'}\beta_j + \delta_j \hat{\lambda}_{ij} + v_{ij} \qquad (12)$$

The term $\delta_j \hat{\lambda}_{ij}$ represents the difference in the earnings due to unobserved productivities between individuals who self-selects into status $_j$ ($\hat{\lambda}_{ij} \neq 0$) and the individuals with the same observable characteristics but who selected at random and are assigned to status $_j$ ($\hat{\lambda}_{ij} = 0$). The sign of δ_j equals that of $\sigma_{\omega\varepsilon}$. If a high value of uij makes the selection of alternative j more likely by reducing the value of ω_{ij}, that implies high values of ε_{ij} go with high values of uij . This would give a negative $\sigma_{\omega\varepsilon}$. A negative sign means that those with a higher earnings capacity for alternative j (a bigger ε_{ij}), have a higher utility for j (a larger uij and lower ω_{ij}). Because $\hat{\lambda}_{ij}$ is negative, a statistically significant and negative estimate of δ_j means a positive selection effect on the earnings equation ($\delta_j \hat{\lambda}_{ij} > 0$), which shows individuals who are more likely to select status $_j$, earn more than those randomly assigned individuals, given the same characteristics.

Chapter 5

Data Description and Sources

5.1 Identification

In chapter 4, I discussed the empirical model and the econometrics used in this dissertation. In this chapter, I present the estimating equation based on the empirical model described in the previous chapter, and then define the dependent and independent variables.

I start in this section with the earnings equation of four groups that have different personal choices of Party membership and ownership sectors. Then, the dependent variable and independent variables are defined in the earnings equations and the identification in multinomial logit model is presented. In section 5.2, I discuss the data sources, components of annual earning, and summary statistics of variables in the Mlogit-OLS two-stage estimation procedure.

The selection of Party membership and ownership sectors is modeled as given by:

$$Choice = F(identification\ \mathrm{var}iable, Experience_i, Experience_i^{\,2}, Gender_i, Minority_i, Education\ level\ dummies, \mathrm{Re}gion\ dummies) + u_i$$

Based on previous studies on the labor market in China, it is expected that CCP workers in either sector are relatively older, more experienced, and have a higher level of education than other workers. Compared to NSOS workers, SOS workers are supposed to be more experienced and educated.

By including the selectivity correction terms in the earnings equation (12) discussed in the previous chapter for individuals who fall into different categories, I can write the final estimating equation as follows:

$$Y_{ij} = \delta_j Mill's\ Ratio_{ij} + \beta_{1j} Experience_i + \beta_{2j} Experience_i^{\,2} + \beta_{3j} Male_i + \beta_{4j} Minority_i + \beta_{5j} Four\ Year\ College_i + \beta_{6j} Two\ Year\ College_i + \beta_{7j}\ \mathrm{Pr}ofessorsional\ School_i + \beta_{8j} Senior\ High\ School_i + \beta_j\ \mathrm{Re}gion\ Dummies + v_{ij}$$

Y_{ij} in the equation is the log of annual earnings of individual i in group j. The definition of annual earnings and its components are presented in the next section. The

earnings equation includes standard explanatory variables: experience, gender, and educational levels. We would expect that the more work experience people have, the higher would be their annual earnings, and returns to an additional year of work experience increase at a decreasing rate. Therefore, the sign on Experience is expected to be positive while $Experience^2$ is expected to have a negative sign. Male is a binary variable indicating the gender of individuals, male (1) or female (0). The findings in previous literature show that males have higher annual earnings than females do, on average. The highest education that an individual attained is measured by five categories: four-year college (or more), two-year college, professional school, senior high, and junior high (or less). The omitted education group includes the individuals with junior high school education attained or less.[30] It is expected that higher education will result in a higher earning, on average.

Identification variables are desirable to achieve the Mlogit-OLS two-stage estimation. They are expected to impact only people's choice but not their earning level. Identification in selection models can be achieved by functional form or exclusion restrictions. In 1999, three identification variables were available: the nature of the recruitment, parental years of schooling, and the parental CCP membership affiliation. In 1995, only the "nature of recruitment" variable was available. However, we have to depend on the functional form (the nonlinearity of inverse mills ratio) to solve the identification problem in 1988, because none of the restriction variables was available.

The "Nature of recruitment"[31] refers to whether individuals' current jobs have been assigned by the government. We would expect that if the individuals' current jobs had been assigned by the government, they would be more likely to have access to SOS jobs and have more motivation to join the CCP, compared with other recruitment alternatives. We believe the way that the individuals were recruited into the work unit potentially affects individuals' ownership sector access and political participation, especially in a relatively sluggish economic system.

Given a theory of intergenerational endowments proposed by Gary Becker and Nigel Tomes, we do prefer to use the parents' characteristics as the instruments of their

[30] In 1999 CHIP sample, all CCP members at NSOS have at least junior-high school education.
[31] The creation of the identification variable "nature of recruitment" is explained in the data section.

children's personal choice. In the traditional family in China, not only do the parents' learning and skills help shape the preferences of the next generation such as choice of job, but also "political affiliation is one measurable dimension of family endowments and cultures" (Liu, 2003). These family background intentionally or unintentionally impart to their children the desirable traits required of a CCP member. In three waves of CHIP data, only the 1999 CHIP questionnaire asked the parents' CCP membership affiliation and their highest education attained. We include them as instruments in 1999.

5.2 Data Source

The data used for the empirical work are taken from the 1988, 1995 and 1999 Chinese Household Income Project (CHIP).[32] These surveys were conducted by the Institute of Economics, Chinese Academy of Social Sciences (CASS) for the years 1988, 1995 and 1999. The questionnaires were designed in a relatively consistent way and provide a reasonable basis for a comparative study (Meng 2004). The 1988 and 1995 CHIP surveys consist of two data files: one in which the individual is the unit of analysis, and a second in which the household is the unit of analysis. We use only the urban individual survey. The 1988 CHIP samples 31,827 individuals from 9,009 urban households, and the 1995 CHIP includes 21,694 individuals from 6,931 urban households, while the 1999 CHIP only samples 9,637 individuals from 3,255 urban households.

Griffin and Zhao (1993) describe the detailed sampling process for the 1988 survey data, which was conducted in the spring of 1989 and covered 10 provinces. Survey data were drawn from significantly large samples used by the National Bureau of Statistics of China (NBS). Liaoning and Shanxi provinces were chosen to represent the north, Jiangsu and Guangdong were chosen to represent the eastern coastal provinces, Anhui, Henan and Hubei were chosen to represent the interior, and Gansu and Yunnan the west (Shu and Bian, 2003). Sichuan province is added to the previous ten provinces in the 1995 survey.[33] However, only six provinces are included in the 1999 survey. They are Beijing, Jiangsu, Liaoning, Henan, Sichuan, and Gansu (Li and Hiroshi, 2006). Therefore, only

[32] The 1988 and 1995 CHIP data are publicly available at the Inter-university Consortium for Political and Social Research and more fully described in the relevant codebooks.
[33] Khan and Riskin (1998) provide a detailed description of the 1995 Survey.

five provinces were included in all three surveys. Table A.1 in Appendix A provides more information about the CHIP data in Urban China, including the number of observations in the surveys.

In order to represent the regional conditions with cities and towns of various sizes[34], the sampling procedures of the CHIP strictly chose respondents from the parent NBS sample. Although the CHIP is much smaller than the National Sample Surveys conducted by NBS, it is interesting to take NBS' large-scale survey as a benchmark and compare some key variables in CHIP to the NBS sample. Panel a on Table 5.1 reports the mean of some variables for workers in CHIP. 52% to 54% of the workers in CHIP sample were male. This percentage is very close to 51% from NBS data. But, 78% to 82% of workers in CHIP sample were in State-owned Sector,[35] it was higher than the percentage from NBS data. The average wage in CHIP sample is comparable to that from NBS data. On average, the workers in CHIP earned more than those in the NBS sample. The average wage in State-owned units and urban collective units was slightly higher in CHIP sample that that from NBS sample, while it was opposite in other NSOS units. Panel b shows the growth rate of average wage in two samples, while Panel c shows the growth rate of GDP per capita. Although the growth rate of average wage in CHIP sample was higher than that in NBS sample from 1995 to 1999, it was quite close to the growth rate of GDP per capita during the same time period. Given the sensitivity of Party membership affiliation, there is no such information in the NBS sample. Additionally, CHIP data provide more individual information than the NBS does. A lot of previous studies by international scholars used CHIP data in their empirical analysis to study poverty, gender wage gap, and human capital in China. Therefore, we are confident with the quality and reliability of CHIP data.

[34] NBS in China conducted the census of the National population in 1953, 1964, 1982 and 1990. The total population in 1988 was adjusted on the basis of the 1982 and 1990 censuses of the national population. Since 1983, the NSB has provided the annual national sample survey on the change in population, among which the samples in 1995 and in 1999 are 1% and 0.976‰ of the population, respectively. The total population in 1995 and 1999 are estimated on the basis of the annual National Sample Surveys on Population Changes. The NBS has been conducting an annual survey of urban households from 226 cities (counties) in China since 1986.

[35] Appendix B provides some potential reasons why the percentage of SOS in the CHIP is higher than that in the NBS sample.

5.3 CHIP Data and Components of Earnings

In this dissertation, we investigate individuals in three survey years that are between 18 and 65 years of age and currently employed. The earning variables used have a composition that is particular to China with a gradual economic reform system being put in place. The individuals' earning defined as the cash income received from their work unit or their own private business.[36] Urban employees' annual earnings are divided into the following components: all cash labor compensations such as wage, other wage income, other cash income, other labor income, and net income of private/individual entrepreneurship. Table 5.2 summarizes these components of the annual earnings used in the dissertation in each year. Since the wage structure varies due to wage reforms in the 1980s and the 1990s, we interpret the components of earnings in 1988 first, and then point out the changes in 1995 and 1999.

The reform on the wage-setting system during the 1980s attempts to link the wages of individuals to their labor productivity within firms. In 1985, the Ministry of Labor (MOL) announced that the budget to be allocated for wages would depend on the economic performance of SOEs and collectively-owned enterprises (COEs), which were allowed to allocate a wage budget based on individuals' performances. Although various versions of this reform appeared in different regions and industries, the 'wage plus bonus' system was the most frequently adopted (Meng, 2004). However, due to a high monitoring cost of labor productivity, the bonuses[37] eventually became an extra component of wages. They are equally distributed among employees in most SOEs.

Another widely implemented wage reform during the 1980s was the introduction of the "floating wage" system. Under this system, part of a worker's basic wage and bonus became a "floating wage" as a reward to the employees on the basis of their own performance or the enterprises' performance. In 1988, 35% of responders in the CHIP had a positive floating wage. Aimed at bringing incentives into enterprises, the labor contract system was introduced into the sluggish labor market in 1983 (Liu 1998). The labor contract in management hierarchy mainly involves three ingredients, the so-called CMI: the contract management system (CMS), the manager responsibility system (MRS),

[36] We drop the observations with zero annual earning.
[37] National Statistic Bureau defines bonuses as remuneration payment to workers for extra work.

and the internal contract system (ICS). The MRS and CMS stipulate the rights of the plant manager and liabilities of them to relevant state/responsibility organs (e.g. municipal government). Multiple-level contracts in the ICS represent the most complete hierarchy within which the enterprise manager operates. The parties in a contract are allowed to keep extra profit excess the target (output target or profit target) as so-called contractual income. Most of the time, the plant managers distributed the retained profit among the parties involved in the CIS according to the degree of their responsibilities. In 1988, only 7% individuals had this contractual income.

The labor contract system was also introduced to the new employees to break the 'iron rice bowl' and stop offering a promised life-long job during the 1980s. The contract specifies the duration of the agreement between workers and firms, as well as the responsibilities and benefits of the respective parties, such as wages, fringe benefits, the nature of work, and required productivity standards (Liu 1998). Either the employee or the firm could decide to not renew upon expiration, or to terminate the contract under certain circumstances, such as employer's default on the agreed wage payment, or a violation of labor discipline. The contracted monetary benefits to the employees (a contractor), if they fulfilled the contract-specified target, were also labeled as the contract income of employees. Liu (1998) provides a detailed description on this type of labor contract, and he interprets the employees with positive contractual income in 1988 CHIP as those on this contract basis. However, I prefer to interpret the contractual income as compensation to those in both cases. In 1988, the shares of workers on contract were 10.1% in SOEs, 5.8% in COEs, and 20.7% in all other types of enterprises (Liu 1998).

Compared with other countries such as the USA[38], the concept and measurement of earnings in China are more complex, because a significant part of individual income originates from non-market transactions. If one counts as earning only basic wages, a bonus, and other wages, etc. but ignores cash subsidies, the 'true' earning will be understated and any comparison with other countries will be misleading. It was therefore necessary to use a more broadly defined earning which included all cash income from

[38] Wages and salaries from the CPS consist of the total monies received for work performed by an employee during the income year. It includes wages, salaries, commissions, tips, piece-rate payments, and cash bonuses earned before deductions were make for taxes, bonds, union dues, etc.

work units including subsidies in cash paid by work units. These subsidies paid to staff and workers are used to compensate special or extra labor or offset the impact of inflation on real wages. [39]

The 1988 CHIP includes cash subsidies for heating, utilities, books and newspapers, nonstaple foods, and housing.[40] The 1995 and the 1999 CHIP include the regional subsidies. As defined by the NBS in China, the 1995 and 1999 CHIP directly classify these subsidies, as a bonus into the so-called wage variable. But the 1995 and 1999 CHIP do not designate any explicit questions about the basic wage as shown in 1988 CHIP questionnaire. They only have the total wage payment listed by work units and some related components. I grouped them into wage component in the dissertation as shown on Table 5.2. Other cash income from work units such as the transportation subsidy and the single child subsidy, and other income generated from labor such as the income from the second job, all serve to compromise 'Other Cash Income' and 'Other Labor Income' components of the earnings in the dissertation. For owners of private enterprises and self-employed businesses, the pre-tax net-income is included.

The major advantage of these data sources is the income data they provide, and they have been used in many previous studies, such as those of Knight, Li and Liu. But unlike the 1995 and 1999 CHIP data, less demographic variables are available in the 1988, such as the nature of recruitment, actual work experience, the years of working in a worker's current job, and so on. To make empirical results comparable in three years, we created the variable "years of work experience" in 1988 following Liu (2003).[41] Another important variable which was used to create an identification variable is the "Nature of recruitment." It refers to the way the individual was recruited into the work unit, a factor which is closely related to the labor market reform in China. To solve the severe urban unemployment problem since 1978, the government adopted different approaches.

For example, the SOS provided a job, or as we describe it, the organization "assigned" a job, to the unemployed (those people waiting for a job). In our CHIP data,

[39] The NBS includes these subsidies in the gross wage.
[40] The house subsidy in cash is counted as a component of the wage earning from the work unit. It differs from the Housing subsidy in kind and other income in kind, counted as part of the household income in Khan et al. (2001).
[41] Experience = age – education - 6

this is called "assigned by the government." State-owned enterprises (SOEs) were also allowed to provide jobs to the unemployed sons and daughters of their employees. This practice is referred to as being "inherited from the parents" in the CHIP data. As the gradual decentralization of the 1980s started to abolish the lifetime employment practice, and allowed employers the autonomy to recruit new employees, people were able to find jobs for themselves, or through an employment agency. This type of practice was a new phenomenon, as previously, workers had to accept the jobs assigned to them, regardless of their personal preference. Given the multiple recruitment efforts and strategies, I created a dummy variable, named the "nature of recruitment", which compared the major job entry type of being "assigned by the government" with other recruitment approaches. We include it as one of the identification variables in our study.

Table 5.3 shows that annual earning rises in three years. Percentage of wage in annual earnings slightly increases from 88% in 1988 to 92% in 1999 while other cash labor compensations, including other wage income, other cash income and other labor income, decrease from 10.3% in 1988 to 5.8% in 1999.

5.4 Summary Statistics of Three Years' CHIP Sample

Table 5.4 indicates that the proportion of CCP workers in the entire sample rose over time. 24% and 25.3% of workers in the entire sample are CCP members in 1988 and 1995, while the proportion of CCP members rises to 30.6% in 1999. Specifically, CCP/SOS workers account for 22%, 23% and 27.2% of the full sample, while the CCP/NSOS category only accounts for 2% of all workers in 1988 and 1995, and reaches 3.5% in 1999. Most CCP members work in the SOS, but the proportion decreases from 1988 to 1999. For example, in 1988 and 1995, 92% of CCP members work at the SOS. But 88.7% of these CCP members work at the SOS in 1999, a smaller number than in 1988 and 1995.[42]

Compared to the workers in the NSOS, we can find a higher proportion of workers in the SOS. For example, 78.2%, 82% and 79.2% of individuals in the entire sample work at the SOS in the three years. But in both sectors, the proportion of workers who are CCP

[42] 73.8%, 78.3% and 75% of NonCCP members have a job at the SOS during the three years, respectively.

members increase over time, respectively. Around 28% of workers at the SOS are CCP members in both 1988 and 1995, and then it increases to 34.3% in 1999. In the NSOS, this proportion also increases from 9% in 1988, to 11% in 1995, and even more so in 1999, to 17%. Correspondingly, the percentages of other workers in both sectors decrease over time, although they comprise the major portion of employees.

We provide both descriptive summary statistics with the full sample and four subcategories in Table 5.5 to Table 5.7: the CCP members in the State-owned sector (CCP/SOS); other workers (NonCCP) in the state-owned sector (NonCCP/SOS); CCP members in the Nonstate-owned sector (CCP/NSOS); and NonCCP workers in the Nonstate-owned sector (NonCCP/NSOS).

The annual earnings are all measured in the 1995 RMB using a domestic consumption price index. We find that the average annual earnings are 4379.768 Yuan and 6251.3 Yuan in 1988 and 1995, and then this number increases to 8385.25 Yuan, which is 34% higher than that in 1995. We notice that CCP members have a considerable advantage in mean earning. CCP members make 25% and 37% higher earnings than NonCCP workers at the SOS and in the NSOS, respectively, in 1988. Contrarily, the CCP-NonCCP unadjusted earning gap in the SOS increases to 30% in 1995 and then slightly goes to 31.5% in 1999. But this earning gap in the NSOS continues to narrow down to 22% in 1995 and 16.4% in 1999.

The Table 5.5 to Table 5.7 shows that the average work experience is 22, 19.4 and 19.7 years in the three years, respectively. The average work experience of CCP members is around 28 years in 1988, 6 years higher than the overall average. It declines to 25 and 24 years in 1995 and 1999. But the average work experience of NonCCP workers is 20 years and then stays at 18 years in 1995 and 1999. It might because more young people such as college students are recruited into CCP in 1990s. As expected, CCP members persistently have more years of work experience than NonCCP workers do. On average, CCP members have worked 8 years more than other workers in either sector in 1988. Interestingly, in both sectors, it decreases to about a 7 and 6 year gap in 1995 and 1999, respectively.

Females and males are almost even in the data. The proportion of males is slightly higher than that of females, reaching 52%, 53% and 54% in three years. Among CCP

members, the males comprise more of the working population than females in either sector. For example, 78%, 73% and 69% of CCP workers at the SOS are males in the three years. Males also account for 61%, 54% and 62% of the CCP/NSOS. Han is an absolutely major part of all individuals in all three years. We find that less than 5% of individuals are minorities in the three years.

The samples in the three years' data show that the average education level increases over time. More than half of the workers in the entire sample only have a junior high school education or less in 1988, but this proportion goes down to 35% in 1995 and 24% in 1999. Although individuals with two or four years' college education (or more) only account for 13% of entire sample in 1988, it increases to 23% in 1995 and reaches 34% in 1999.

Compared to other workers, CCP members tend to have higher levels of education, with a higher proportion of workers with a college education (or more) in the full sample. 26.6% and 40.3% of CCP members have a college education (or more)[43] in 1988 and 1995, and this number rises to 54% in 1999. The proportion of NonCCP workers who have completed this level of education is much lower, but it keeps increasing from only 8.6% in 1988, to 17.7% in 1995 and 26.4% in 1999.

In each sector, I also observe an increasing proportion of both CCP members and NonCCP workers who have completed a college education, but the SOS has a higher proportion than the NSOS. For example, 28% of CCP members in the SOS in 1988 have a college education but this proportion was as low as 10% in the NSOS in 1988. It increases significantly to 42.2% in the SOS and 18% in the NSOS in 1995, reaching as high as 55% in the SOS and 47% in the NSOS in 1999. In the SOS, the proportion of NonCCP workers with such an educational level rises from 11% in 1988 to 20.7% in 1995 and 29.1% in 1999, but it is as low as 1.9% in the NSOS in 1988 and increases to 6.6% and 18.3% in 1995 and 1999, respectively.

Contrarily, the proportion of CCP members who have less than a professional school education is decreasing over time in both sectors. In the SOS, this proportion is 55% in 1988, 37% in 1995, and only 30% in 1999. In the NSOS, the number appears to be 83%

[43] A college education stands for either two-year college education or four-year college education or more.

in 1988, 69% in 1995, but only 38% in 1999. Other workers have a similarly changing pattern. The proportion in the SOS decreases from 78% in 1998 to 61% in 1995 and 56% in 1999. In the NSOS, it changes from 95% in 1988 to 86% in 1995 and 70% in 1999.

In a word, CCP members in the SOS have a higher average education than both NonCCP workers in the SOS and CCP members NSOS, which have a higher average education than NonCCP workers in the NSOS.

The industrial sector attracts the largest part of CCP and NonCCP workers in both the SOS and the NSOS sectors, but the proportion in 1999 declines significantly. This trend is consistent with that in Appleton et al. (2005). They find a gradual shift in industrial structure, with a declining share of employment in primary and secondary sectors but a rising share in service sector from 1988 to 2002. In this dissertation, I find that similar to 1988, 42% of all individuals work in the industry sector in 1995, but only 29.2% in 1999. In the SOS, 27% and 28.7% of CCP members work at the industry sector in 1988 and 1995, but only 20% in 1999. This number is even higher in the NSOS, with 57% in 1988 and 1995, but 41% in 1999. NonCCP workers present a similar pattern at two sectors with decreasing numbers over time. For example, 44% and 57% of NonCCP members in both sectors have a job in the industry sector in 1988, falling to 42.3% and 54.8% in 1995, and reaching as low as 31% and 37% in 1999. One of the possible reasons could be the expansion of other economic sectors due to greater openness in China in the late 1990s. For example, 10% of individuals work in the transportation sector in 1999, twice that in 1995. Other economic sectors including the service industry, account for only 1.1% and 2.6% in 1988 and 1995, but this number rises to 9.4% in 1999. The change in industrial structure could be also related to retrenchment in unprofitable SOEs in heavy industry[44]. Other sectors that we need to pay attention to are the commerce sector, real estate, and social organizations. 14.5% (14.5%, 9.2%) of the sample held a job in the commerce sector in 1988(1995 and 1999). In the SOS, 14% of NonCCP workers and 10% of CCP members work in the commerce sector in both 1988 and 1995, but this percentage falls below 9% in 1999. As expected, the workers in the NSOS are more likely to work in the

[44] In order to reform the SOEs, the retrenchment, xia gang, was first experimented with in 1994 and finally launched fully in 1997. It aims to resolve the problem of overstaffing and inefficiency in the SOEs by laying-off a quarter or more SOE workers within a four-year period from 1997 to 2000.

commerce sector than are those in the SOS. We observe that these proportions in the NSOS are all larger than those in the SOS. In the entire sample, more and more workers choose a job in the real estate sector over time. We observe 2.5%, 4% and 6% of the workers in this sector in three years, respectively. Specifically, the NSOS has a much higher percentage of workers in the real estate sector than the SOS does in 1988 and 1995, but the difference becomes smaller in 1999 as more workers in the SOS and fewer workers in the NSOS choose real estate or consulting services. 8.6% (12.1%, 9.8%) of workers work in social organizations in 1988 (1995 and 1999). The proportion of CCP members in the SOS that work in CCP organizations or social organizations is more than twice of the average level, reaching 24.7% in 1988 and 27% in 1995 and 1999. However, only 5.3%, 9.3% and 8.1% of NonCCP members in the SOS work in social organizations in the three years, respectively. These numbers are even smaller in the NSOS.

Table 5.1 CHIP Sample v.s. NBS Data

Panel a. Key variables	1988		1995		1999	
Variable	CHIP Sample	NBS	CHIP Sample	NBS	CHIP Sample	NBS
SOS	78.2%	70.0%	81.8%	59.0%	79.2%	40.8%
Male	52.4%	51.5%	53.1%	51.0%	54.3%	51.0%
Average Wage	￥4,379.77	NA	￥6,351.30	￥4,288.09	￥8,385.25	￥5,353.43
State-owned units	￥4,523.90	￥4,223.59	￥6,464.12	￥5,625.00	￥8,687.94	￥7,762.82
Urban Collective units	￥3,697.52	￥3,250.32	￥4,894.96	￥3,931.00	￥5,557.72	￥5,246.69
Other NSOS units	￥5,915.47	NA	￥7,305.14	￥7,463.00	￥8,572.65	￥8,931.37

Panel b. Growth Rate of Average Wage	From 1988 to 1995		From 1995 to 1999		From 1988 to 1999	
	CHIP Sample	NBS	CHIP Sample	NBS	CHIP Sample	NBS
Average Wage	45.0%	NA	32.0%	24.8%	91.5%	NA
State-owned units	42.9%	33.2%	34.4%	38.0%	92.0%	83.8%
Urban Collective units	32.4%	20.9%	13.5%	33.5%	50.3%	61.4%
Other NSOS units	23.5%	NA	17.4%	19.7%	44.9%	NA

Table 5.1 (Continued) CHIP Sample v.s. NBS Data

Panel c. GDP Per Capita	1988	1995	1999
GDP per capita	￥3,088.49	￥4,854.00	￥6,505.21
	1988 - 1995	1995 - 1999	1988 - 1999
Growth Rate of GDP per Capita	57.2%	34.0%	110.6%

Note: NBS data in 1988 was adjusted on the basis of the 1982 and 1990 National Population censuses. Since 1990, NBS data have been estimated on the basis on the annual National Sample Surveys on Population Changes. NBS Data of SOS Units is from Table '5-4 Number of Employed Persons at the Year-end by Residence in Urban and Rural Areas' from 1952 to 1999. NBS Data of Average wage by ownership sector is from Table '5-23 Average Wage of Staff and Workers in State-owned Units by Sector' on China Statistical Year Book 2000. Average wage at an overall level is calculated based on Table '5-23 Average Wage of Staff and Workers in State-owned Units by Sector', Table '5-8 Number of Staff and Workers in State-owned Units at the Year-end by Sector', Table '5-9 Number of Staff & Workers in Urban Collective-owned Units at the Year-end by Sector', and Table '5-10 Number of Staff and Workers in Units of other Types of Ownership at the Year-end by Sector'. GDP per capita is from http://www.chinability.com/GDP.htm

Table 5.2 Components of Annual Earnings

Components of Annual Earning	1988	1995	1999
Wage	Regular wage/basic wage, Floating wage, bonuses, Subsidies, Contract income	1) allowance while waiting for job; 2) bonuses, subsidies such as housing subsidies in cash, medical subsidies, child care subsidies and regional subsides; 7) overtime wages; 8)wages paid for special circumstances.	1) bonuse, 2) subsidies 3) layoff subsidies Note: sum of these components are not necessarily equal to wage, so they are just sub-components of wage bill
Other Wage Income	Other employee income	Other employee income, Wage income of employees of individual enterprises	Other employee income, Wage income of employees of individual enterprises
Other Cash Income	Other cash income from work unit such as bath and haircut subsidy, transportation subsidy, single-child subsidy, hardship allowance	Other income from the work unit including hardship allowance;	Other income from the work unit including hardship allowance
Other Labor Income	Income from a second job	Income from a second job	Income from a second job
Net Income of Private/Individual Entrepreneurship	Pre-tax net income of private/individual enterprises owned/operated by the household	Pre-tax net income of private/individual enterprises owned/operated by the household	Net income of private/individual enterprises owned/operated by the household

Note: The 1988 survey asks about income in a typical month and this is simply converted to annual income by multiplying by twelve. In 1995 and 1999, information on annual income was solicited. Allowance while 'waiting for job' in 1995 is not unemployment pension. It is a part of wage payment to the employees who are waiting for back to work. In 1995, no formal bankruptcy mechanism was established and applied to SOEs, so it becomes the firms' responsibilities to take care of the employees when the firms stop production due to a loss. Here we could treat it as allowance to temporary unemployment in 1995.

Table 5.3 Sample Mean of Components of Annual Earnings

Components of Annual Earning	1988	1995	1999	1988	1995	1999
Wage	3,872.738	5,680.022	7,697.637	88.4%	90.9%	91.8%
	(2140.414)	(3436.033)	(4672.794)			
Other Wage Income	87.390	35.390	53.925	2.0%	0.6%	0.6%
	(274.926)	(551.095)	(620.529)			
Other Cash Income	333.934	387.847	257.637	7.6%	6.2%	3.1%
	(568.991)	(771.966)	(914.318)			
Other Labor Income	30.879	103.141	179.009	0.7%	1.6%	2.1%
	(333.236)	(679.121)	(1112.253)			
Net Income of Private/Individual Firms	54.827	44.897	197.039	1.3%	0.7%	2.3%
	(1154.033)	(737.782)	(3263.859)			
Annual Earning	4,379.768	6,251.297	8,385.246	100.0%	100.0%	100.0%
	(2541.179)	(3815.127)	(5724.796)			

Note: Components of Annual Earnings are all measured in 1995 RMB using domestic consumption price index.

Standard deviation is in parenthesis.

Table 5.4 Distribution of Workers by Ownership Sectors and Party Membership

# of Workers	1988	1995	1999	Percentages	1988	1995	1999
CCP/SOS	**3,805**	**2,464**	**1,210**	Percentage of CCP/SOS in full sample	22.0%	23.3%	27.2%
CCP/NSOS	**333**	**217**	**154**	Percentage of CCP/NSOS in full sample	1.9%	2.1%	3.5%
NonCCP/SOS	**9,732**	**6,188**	**2,321**	Percentage of NonCCP/SOS in full sample	56.2%	58.5%	52.1%
NonCCP/NSOS	**3,450**	**1,711**	**771**	Percentage of NonCCP/NSOS in full sample	19.9%	16.2%	17.3%
Full Sample	**17,320**	**10,580**	**4,456**	Sub total	100.0%	100.0%	100.0%
CCP total	**4,138**	**2,681**	**1,364**	Percentage of CCP workers in full sample	23.9%	25.3%	30.6%
NonCCP Total	**13,182**	**7,899**	**3,092**	Percentage of other workers in full sample	76.1%	74.7%	69.4%
Full Sample	**17,320**	**10,580**	**4,456**	Sub total	100.0%	100.0%	100.0%
				Among CCP members, Percentage of SOS workers	92.0%	91.9%	88.7%
				Among Others, Percentage of SOS workers	73.8%	78.3%	75.1%
SOS Total	**13,537**	**8,652**	**3,531**	Percentage of SOS in full sample	78.2%	81.8%	79.2%
NSOS Total	**3,783**	**1,928**	**925**	Percentage of NSOS in full sample	21.8%	18.2%	20.8%
Full Sample	**17,320**	**10,580**	**4,456**	Sub total	100.0%	100.0%	100.0%
				In SOS, Percentage of CCP workers	28.1%	28.5%	34.3%
				In NSOS, Percentage of CCP workers	8.8%	11.3%	16.6%

Table 5.5 Summary Statistics in 1998

Year 1988 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**17320**	**3805**	**9732**	**333**	**3450**
annualearning	annual income	4379.768	5273.359	4230.872	5124.850	3742.328
		(2541.179)	(2761.310)	(2122.025)	(4273.400)	(2854.945)
lnearning	log annual income	8.281	8.506	8.259	8.425	8.080
		(0.455)	(0.329)	(0.430)	(0.425)	(0.528)
state	if ownership of the	0.782	1	1	0	0
	workplace is state-owned	(0.413)	(0.000)	(0.000)	(0.000)	(0.000)
partymember	if individual is partymember	0.239	1	0	1	0
		(0.426)	(0.000)	(0.000)	(0.000)	(0.000)
experience	work experience	22.038	27.714	20.209	28.209	20.342
		(10.816)	(9.378)	(10.528)	(9.883)	(10.808)
experience2	square of working	602.673	856.015	519.239	893.109	530.583
	experience	(516.888)	(529.092)	(473.161)	(582.876)	(514.484)
male	if individual is male	0.524	0.777	0.482	0.613	0.353
		(0.499)	(0.416)	(0.500)	(0.488)	(0.478)
minority	if individual is monority	0.038	0.046	0.035	0.018	0.040
		(0.191)	(0.210)	(0.183)	(0.133)	(0.195)
fourcollege	if individual has four years'	0.062	0.141	0.052	0.042	0.003
	college education	(0.240)	(0.348)	(0.222)	(0.201)	(0.059)
twocollege	if individual has two or	0.068	0.139	0.058	0.063	0.016
	three years' college education	(0.251)	(0.346)	(0.234)	(0.243)	(0.126)
professional	if individual has professional	0.112	0.172	0.118	0.063	0.032
_school	school education	(0.315)	(0.377)	(0.323)	(0.243)	(0.177)
senior_high	if individual has senior high	0.249	0.191	0.274	0.216	0.247
	school education	(0.433)	(0.393)	(0.446)	(0.412)	(0.431)
junior_high or	if individual has junior high	0.510	0.357	0.498	0.616	0.701
below	school education or less	(0.500)	(0.479)	(0.500)	(0.487)	(0.458)

Table 5.5 (Continued) Summary Statistics in 1988

Year 1988 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**17320**	**3805**	**9732**	**333**	**3450**
industry	If economic sector is industry	0.428	0.270	0.435	0.568	0.572
		(0.495)	(0.444)	(0.496)	(0.496)	(0.495)
construction	If economic sector is construction	0.035	0.029	0.033	0.033	0.047
		(0.183)	(0.167)	(0.178)	(0.179)	(0.211)
transportation	If economic sector is transportation	0.068	0.068	0.077	0.066	0.041
		(0.251)	(0.252)	(0.266)	(0.249)	(0.199)
commerce	If economic sector is commerce	0.145	0.101	0.140	0.183	0.205
		(0.352)	(0.302)	(0.347)	(0.387)	(0.404)
real_estate	If economic sector is real estate	0.025	0.017	0.023	0.021	0.040
		(0.155)	(0.128)	(0.148)	(0.144)	(0.196)
health	If economic sector is public health, sports and social welfare	0.046	0.056	0.052	0.045	0.019
		(0.210)	(0.230)	(0.222)	(0.208)	(0.138)
arts	If economic sector is arts	0.073	0.105	0.085	0.021	0.010
		(0.260)	(0.306)	(0.278)	(0.144)	(0.097)
organization	If economic sector is party, government or social organization	0.086	0.247	0.053	0.033	0.008
		(0.280)	(0.431)	(0.223)	(0.179)	(0.090)
other_eco _sector	Other economic sectors	0.095	0.108	0.104	0.030	0.058
		(0.293)	(0.310)	(0.306)	(0.171)	(0.234)
BJ	Bei Jing	0.048	0.054	0.054	0.036	0.028
		(0.215)	(0.226)	(0.226)	(0.187)	(0.166)
LN	Liang Ning	0.106	0.114	0.085	0.162	0.151
		(0.308)	(0.318)	(0.279)	(0.369)	(0.358)
JS	Jiang Su	0.130	0.094	0.120	0.141	0.196
		(0.336)	(0.292)	(0.325)	(0.349)	(0.397)

Table 5.5 (Continued) Summary Statistics in 1988

Year 1988 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**17320**	**3805**	**9732**	**333**	**3450**
HN	He Nan	0.115	0.124	0.121	0.075	0.089
		(0.319)	(0.330)	(0.327)	(0.264)	(0.284)
GS	Gan Su	0.065	0.078	0.067	0.069	0.043
		(0.246)	(0.267)	(0.251)	(0.254)	(0.204)
AH	An Hui	0.097	0.083	0.090	0.138	0.128
		(0.296)	(0.275)	(0.286)	(0.346)	(0.334)
HB	He Bei	0.110	0.127	0.112	0.102	0.085
		(0.312)	(0.333)	(0.315)	(0.303)	(0.279)
GD	Guang Dong	0.120	0.098	0.118	0.150	0.146
		(0.325)	(0.298)	(0.322)	(0.358)	(0.353)
YN	Yun Nan	0.103	0.121	0.114	0.075	0.055
		(0.304)	(0.326)	(0.318)	(0.264)	(0.229)
SX	Shan Xi	0.105	0.107	0.117	0.048	0.075
		(0.307)	(0.310)	(0.322)	(0.214)	(0.263)

Table 5.6 Summary Statistics in 1995

Year 1995 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**10580**	**2464**	**6188**	**217**	**1711**
annualearning	annual income	6251.297	7731.287	5959.548	6304.373	5168.379
		(3815.127)	(4162.489)	(3412.408)	(3546.343)	(4090.538)
lnearning	log annual income	8.570	8.836	8.533	8.595	8.320
		(0.639)	(0.513)	(0.628)	(0.594)	(0.710)
state	if ownership of the	0.818	1.000	1.000	0.000	0.000
	workplace is state-owned	(0.386)	(0.000)	(0.000)	(0.000)	(0.000)
partymember	if individual is partymember	0.253	1.000	0.000	1.000	0.000
		(0.435)	(0.000)	(0.000)	(0.000)	(0.000)
experience	work experience	19.375	24.735	17.910	23.410	16.444
		(9.591)	(8.380)	(9.432)	(8.287)	(8.812)
experience2	square of working experience	467.394	682.008	409.722	616.396	348.009
		(387.961)	(416.453)	(361.131)	(385.317)	(308.641)
male	if individual is male	0.531	0.731	0.490	0.544	0.391
		(0.499)	(0.444)	(0.500)	(0.499)	(0.488)
minority	if individual is monority	0.043	0.039	0.046	0.051	0.040
		(0.204)	(0.195)	(0.209)	(0.220)	(0.197)
fourcollege	if individual has four years'	0.079	0.153	0.068	0.041	0.013
	college education	(0.269)	(0.360)	(0.252)	(0.200)	(0.115)
twocollege	if individual has two or	0.156	0.269	0.139	0.138	0.053
	three years' college education	(0.362)	(0.444)	(0.346)	(0.346)	(0.224)
professional	if individual has professional	0.171	0.203	0.186	0.134	0.072
_school	school education	(0.376)	(0.403)	(0.389)	(0.341)	(0.258)
senior_high	if individual has senior high	0.244	0.169	0.263	0.244	0.281
	school education	(0.429)	(0.375)	(0.441)	(0.431)	(0.449)
junior_high	if individual has junior high	0.352	0.205	0.343	0.442	0.581
or below	school education or less	(0.477)	(0.404)	(0.475)	(0.498)	(0.494)

Table 5.6 (Continued) Summary Statistics in 1995

Year 1995 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**10580**	**2464**	**6188**	**217**	**1711**
industry	If economic sector is industry	0.415	0.287	0.423	0.571	0.548
		(0.493)	(0.453)	(0.494)	(0.496)	(0.498)
construction	If economic sector is construction	0.029	0.024	0.031	0.014	0.032
		(0.168)	(0.153)	(0.173)	(0.117)	(0.175)
transportation	If economic sector is transportation	0.051	0.046	0.056	0.065	0.040
		(0.220)	(0.209)	(0.230)	(0.246)	(0.195)
commerce	If economic sector is commerce	0.145	0.096	0.141	0.171	0.227
		(0.352)	(0.295)	(0.348)	(0.377)	(0.419)
real_estate	If economic sector is real estate	0.039	0.029	0.036	0.074	0.061
		(0.194)	(0.168)	(0.186)	(0.262)	(0.239)
health	If economic sector is public health, sports and social welfare	0.046	0.052	0.053	0.009	0.019
		(0.210)	(0.222)	(0.223)	(0.096)	(0.138)
arts	If economic sector is arts	0.074	0.096	0.084	0.009	0.014
		(0.261)	(0.294)	(0.277)	(0.096)	(0.118)
organization	If economic sector is party, government or social organization	0.121	0.268	0.093	0.055	0.018
		(0.326)	(0.443)	(0.290)	(0.229)	(0.131)
other_eco	Other economic sectors	0.080	0.101	0.084	0.032	0.041
_sector		(0.272)	(0.302)	(0.278)	(0.177)	(0.199)
BJ	Bei Jing	0.068	0.091	0.069	0.051	0.034
		(0.252)	(0.288)	(0.253)	(0.220)	(0.183)
LN	Liang Ning	0.108	0.088	0.117	0.051	0.113
		(0.311)	(0.283)	(0.322)	(0.220)	(0.316)
JS	Jiang Su	0.109	0.086	0.095	0.166	0.184
		(0.311)	(0.280)	(0.293)	(0.373)	(0.387)

Table 5.6 (Continued) Summary Statistics in 1995

Year 1995 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**10580**	**2464**	**6188**	**217**	**1711**
HN	He Nan	0.087	0.089	0.089	0.120	0.074
		(0.282)	(0.285)	(0.284)	(0.325)	(0.261)
GS	Gan Su	0.052	0.057	0.055	0.023	0.033
		(0.221)	(0.232)	(0.229)	(0.150)	(0.178)
AH	An Hui	0.073	0.063	0.066	0.083	0.110
		(0.260)	(0.244)	(0.248)	(0.276)	(0.313)
HB	He Bei	0.101	0.113	0.105	0.097	0.069
		(0.302)	(0.317)	(0.307)	(0.296)	(0.253)
GD	Guang Dong	0.089	0.090	0.072	0.138	0.143
		(0.285)	(0.286)	(0.258)	(0.346)	(0.350)
YN	Yun Nan	0.098	0.119	0.100	0.088	0.064
		(0.298)	(0.323)	(0.300)	(0.283)	(0.245)
SX	Shan Xi	0.097	0.091	0.112	0.051	0.058
		(0.296)	(0.287)	(0.315)	(0.220)	(0.234)
SC	Shi Chuan	0.118	0.114	0.119	0.134	0.119
		(0.323)	(0.317)	(0.324)	(0.341)	(0.323)
assigned	if the government	0.759	0.912	0.759	0.737	0.540
	assigned a job	(0.428)	(0.283)	(0.427)	(0.441)	(0.499)
Married	if ever married	0.885	0.981	0.855	0.963	0.847
		(0.319)	(0.135)	(0.352)	(0.189)	(0.360)

Table 5.7 Summary Statistics in 1999

Year 1999 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**4456**	**1210**	**2321**	**154**	**771**
annualearning	annual income	8385.246	10309.840	7842.396	8191.876	7037.613
		(5724.796)	(5601.338)	(4306.349)	(4863.277)	(8440.665)
lnearning	log annual income	8.862	9.114	8.817	8.851	8.603
		(0.613)	(0.524)	(0.583)	(0.579)	(0.693)
state	if ownership of the	0.792	1.000	1.000	0.000	0.000
	workplace is state-owned	(0.406)	(0.000)	(0.000)	(0.000)	(0.000)
partymember	if individual is partymember	0.306	1.000	0.000	1.000	0.000
		(0.461)	(0.000)	(0.000)	(0.000)	(0.000)
experience	work experience	19.668	24.109	18.321	22.500	16.189
		(9.463)	(8.543)	(9.072)	(8.397)	(9.561)
experience2	square of working experience	476.380	654.169	417.921	576.305	353.385
		(379.491)	(402.127)	(348.151)	(368.184)	(331.760)
male	if individual is male	0.543	0.693	0.490	0.617	0.450
		(0.498)	(0.462)	(0.500)	(0.488)	(0.498)
minority	if individual is monority	0.039	0.038	0.041	0.019	0.038
		(0.193)	(0.191)	(0.198)	(0.139)	(0.190)
fourcollege	if individual has four years'	0.114	0.199	0.090	0.169	0.043
	college education	(0.318)	(0.400)	(0.286)	(0.376)	(0.203)
twocollege	if individual has two or	0.234	0.350	0.201	0.305	0.140
	three years' college education	(0.424)	(0.477)	(0.401)	(0.462)	(0.347)
professional	if individual has professional	0.143	0.147	0.149	0.143	0.122
_school	school education	(0.351)	(0.354)	(0.356)	(0.351)	(0.327)
senior_high	if individual has senior high	0.248	0.168	0.284	0.188	0.278
	school education	(0.432)	(0.374)	(0.451)	(0.392)	(0.448)

Table 5.7 (Continued) Summary Statistics in 1999

Year 1999 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**4456**	**1210**	**2321**	**154**	**771**
junior_high	if individual has junior high	0.244	0.127	0.262	0.195	0.385
or below	school education or less	(0.430)	(0.333)	(0.440)	(0.397)	(0.487)
industry	If economic sector is industry	0.292	0.202	0.306	0.409	0.370
		(0.455)	(0.402)	(0.461)	(0.493)	(0.483)
construction	If economic sector is	0.043	0.036	0.050	0.058	0.031
	construction	(0.203)	(0.187)	(0.217)	(0.235)	(0.174)
transportation	If economic sector is	0.103	0.137	0.102	0.045	0.064
	transportation	(0.304)	(0.344)	(0.303)	(0.209)	(0.244)
commerce	If economic sector is	0.092	0.050	0.071	0.156	0.208
	commerce	(0.289)	(0.219)	(0.256)	(0.364)	(0.406)
real_estate	If economic sector is	0.061	0.056	0.070	0.065	0.040
	real estate	(0.239)	(0.230)	(0.255)	(0.247)	(0.197)
health	If economic sector is public health, sports and social	0.054	0.063	0.059	0.058	0.023
	welfare	(0.225)	(0.243)	(0.235)	(0.235)	(0.151)
arts	If economic sector is arts	0.086	0.107	0.102	0.006	0.019
		(0.280)	(0.310)	(0.302)	(0.081)	(0.138)
organization	If economic sector is party, government or social	0.098	0.195	0.081	0.045	0.008
	organization	(0.298)	(0.396)	(0.274)	(0.209)	(0.088)
other_eco	Other economic sectors	0.171	0.152	0.160	0.136	0.202
_sector		(0.377)	(0.359)	(0.367)	(0.344)	(0.402)
BJ	Bei Jing	0.480	0.452	0.477	0.156	0.237
		(0.500)	(0.498)	(0.500)	(0.364)	(0.426)

Table 5.7 (Continued) Summary Statistics in 1999

Year 1999 Variable	Interpretation	All sample	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
Obs		**4456**	**1210**	**2321**	**154**	**771**
JS	Jiang Su	0.164	0.149	0.178	0.091	0.160
		(0.370)	(0.356)	(0.383)	(0.288)	(0.366)
LN	Liang Ning	0.155	0.140	0.135	0.240	0.222
		(0.362)	(0.347)	(0.342)	(0.429)	(0.416)
HN	He Nan	0.187	0.204	0.199	0.149	0.132
		(0.390)	(0.403)	(0.400)	(0.358)	(0.339)
GS	Gan Su	0.135	0.136	0.146	0.110	0.106
		(0.342)	(0.342)	(0.353)	(0.314)	(0.308)
SC	Si Chuan	0.198	0.208	0.178	0.305	0.223
		(0.399)	(0.406)	(0.382)	(0.462)	(0.417)
assigned	if the government	0.694	0.838	0.692	0.727	0.471
	assigned a job	(0.461)	(0.369)	(0.462)	(0.447)	(0.499)
fmparty	if father or mother is	0.414	0.435	0.426	0.481	0.332
	CCP member	(0.493)	(0.496)	(0.495)	(0.501)	(0.471)
fschooling	years of schooling of father	7.963	7.823	8.103	7.643	7.825
		(3.931)	(3.907)	(3.971)	(4.060)	(3.810)
mschooling	years of schooling of mother	6.302	5.952	6.535	5.955	6.222
		(3.377)	(3.316)	(3.464)	(3.279)	(3.170)
married	if never married	0.892	0.969	0.868	0.955	0.833
		(0.310)	(0.172)	(0.339)	(0.209)	(0.373)

Chapter 6

Empirical Results

6.1 Introduction

This chapter discusses the results from estimating the two-stage Multinomial Logit-linear wage model presented in previous chapters. The resulting earning differentials are decomposed and Party premiums are predicted in the SOS and NSOS, respectively. Section 6.2 presents multinomial logit estimates. Recall that each worker faces four choices, delineated by investment on the political capital and their ownership sector status: CCP/SOS, NonCCP/SOS, CCP/NSOS and NonCCP/NSOS. The findings show that increased work experience, increased educational attainment, and being male pull workers from the NSOS category, and move them to the CCP/SOS category. Section 6.3 and Section 6.4 thoroughly discusses the earning equations in four categories by using both OLS and M-Logit estimates. The different returns to years of experience, gender, education levels are compared between CCP members and other workers in either sector. There is strong evidence that investments in human capital play a more important role in the earning structure for NonCCP workers than for CCP workers in SOS. There are no significant different returns to most education levels of CCP members between two sectors, while returns to NonCCP workers with high education in the NSOS are significantly higher than that of their counterparts in the SOS in 1988, but the returns to human capital of NonCCP workers become indifferent statistically in 1995 and 1999. Section 6.6 shows decomposition of earning differentials and Section 6.7 predicts the Party premium in two sectors, respectively. The 1999 results indicate that the political capital became less important in the payment scheme in the NSOS, and that it was not accounted as a key factor of productivity in other enterprises in the NSOS. Section 6.7 summarizes all the findings in chapter 6.

6.2 Multinomial Logit Estimates

Multinomial logit estimates of categorical choice for each year are presented in Tables 6.1 through 6.3. Each Table provides marginal effects of each variable on

probability of joining a particular category at the mean values of independent variables. It was found that increased work experience, increased educational attainment, and being male are the statistically significant variables which seem to pull workers from the NCCP category in either sector, and move them to the CCP/SOS category. Specifically, one more year of work experience always increases the probability of being in the CCP/SOS category in 1999 and it does so until 85 (81) years of experience in 1988 (1995). The magnitude of the increase in the probability starts to decrease at 43 (44) years of experience in 1988 (1995). Being male significantly increase the probability of being in the CCP/SOS category, while it decreases the probability of being in the NonCCP/SOS and NonCCP/NSOS categories. Compared with workers of less than senior high school education, those of other education levels are significantly associated with bigger probability of being in the CCP/SOS category, but less likely of being in NonCCP categories in either sector. The impacts on CCP/NSOS category are usually minimum or insignificant.

Meanwhile, the higher the education level, the more likely a worker will be a CCP member at SOS. For example, compared to non-senior-high-school graduates, a worker with a four-year college education (or greater) was 35% more likely to be in CCP/SOS category in 1988, while a professional school graduate was 19% more likely to be in this category. In fact, all levels of higher educational attainment appear to significantly increase the probability of joining the CCP/SOS category when compared to participants with less than three years of senior high school. But the impact went down in 1995 and then went up in 1999. For example, compared to non-senior-high-school graduates, the impact of a four-year college education (or greater) fell to 28% in 1995 and then went up to 47% in 1999.

However, educational attainment seems to reduce the probability of being a NonCCP worker in both SOS and NSOS. The coefficients of education dummies in CCP/NSOS are very small in both 1988 and 1995. And while some significance was found for this group, their impacts are minimal at best. In 1999, workers with a college education have a significantly different probability of being in CCP/NSOS than workers with a junior high school attainment (or less).

The marginal effect of gender is not statistically significant or minimal in CCP/NSOS category, but does show that males were more likely to be recruited into CCP/SOS than females during the three years under consideration in this dissertation. In 1988, males had a higher probability of choosing CCP/SOS and CCP/NSOS categories[45] than females, but a lower probability of being in NonCCP/SOS and NonCCP/NSOS categories. In 1995 and 1999, the same pattern was found except that the gender variable does not have significant impact on the probability of choosing the CCP/NSOS category.

For the three years presented in this study, the data indicate that being in the Party organization sector is associated with higher probability of being in the CCP/SOS when compared to other economic sectors, but associated with lower probability of being in the NonCCP/NSOS category. Compared to other economic sectors, it is associated with smaller probability of being in the NonCCP/SOS category in both 1988 and 1995, and the coefficient becomes non-significant for this category in 1999.

The commerce sector, on the other hand, is always associated with higher probability of being in either category of the NSOS when compared to other economic sectors, but a lower probability of a worker being in NonCCP/SOS. Interestingly, the industry sector is significantly associated with smaller probability of being in the CCP/SOS category when compared to other economic sectors during these three years. It significantly pulled workers from SOS and moved them to NSOS in 1988 and 1995, which is indicated by positive coefficients of industry sector in both categories of the NSOS. But it is associated with higher probability of being in the NonCCP/SOS category in 1999 when compared to other economic sectors in the omitted group.

Suppose we regard Guangdong as representing the southern coastal area, Liaoning for the north-eastern area, Jiangsu for the eastern coastal area, Anhui and Henan for the interior area, Shanxi and Gansu for the north-western area, and Sichuan for the south-western area. The results indicate that workers in the southern coastal area, interior area and the north-east areas have a greater chance of being in the NSOS due to the development of economies from the late 1980s to the 1990s. Specifically, the north-eastern area (Liaoning) has a larger probability of being in NonCCP/NSOS category in

[45] The marginal effect of gender is minimal (0.005) in CCP/NSOS category although it is statistically significant.

1988 and 1995, and it pulls workers from SOS categories and moves them to two NSOS categories in 1999. The southern coastal area (Guangdong) has a larger probability of being in NonCCP/NSOS category in 1988 and it moves workers to CCP/NSOS as well in 1995[46]. Province Anhui initiated HRS in the rural area, the concept of market economy is supposed to be accepted more broadly than other interior area. In the data, it is found that Anhui has larger probability of being in NonCCP/NSOS category but smaller probability of being in SOS category in 1988 and 1995.

6.3 Earning Equations

The main results and analyses in the selection correction section are from two-stage estimation. The estimates for each year are presented in Table 6.4, Table 6.5 and Table 6.6. Obtained by using bootstrap with 1000 replications, the standard errors for the two-stage estimates are displayed in parentheses. Note the annual earnings are all measured in 1995 RMB using the domestic consumption price index. Similar to what studies of most industrialized and developing market economies found, 20% to 40% of the earning variation can be explained by experience, education levels, gender, and economic sectors (Miller 1987; Kidd and Meng 1997).

In all categories expect for CCP/SOS in 1988 and CCP/NSOS in 1999, "years of experience" significantly increases the individuals' annual earning at a decreasing rate in each year, which exhibits a traditional inverse-U-shape as in a market economy (See Figure 6.1).

This marginal effect is relatively higher for NonCCP workers in the SOS, comparing to CCP/SOS category. For example, Table 6.7 shows an average return of one additional year of work experience when a worker has worked 15 years. Given 15 years of experience, the average return of one additional year of experience is generally lower for CCP members than that of comparable NonCCP members in the SOS and across time. The log earning of CCP workers in the SOS keeps increasing along with years of experience in 1988, especially for CCP workers in the SOS. It is similar to the findings in Meng (2000) and Shao (1992), which indicates that China's experience-earning profile

[46] 1999 CHIP data do not contain province Guangdong and Anhui.

different from other market economies in 1980s. But Meng (2000) and Shao (1992) do not break it down by CCP membership. They find that the earnings in SOEs are mainly determined by seniority rather than productivity until 1990, with evidence of continuous increase in log earning over years of experience until retirement. Although Japan has a similar earning-experience profile, lifetime employment in Japan is endogenously determined by the joint investment of firms and workers in firm-specific skill training, which, in turn, has pushed the wage determination system to help workers maintain a long tenure. However, most SOS firms in urban China were not given the autonomy to recruit workers until late 1980s. Lack of labor mobility is one of the potential reasons why the wage structure was not able to reflect actual labor productivity. Additionally, ownership structure of SOS determined that the wage reform mainly focuses on equal distribution of profit-related bonuses rather than productivity-related factors in 1980s.

Interestingly, earning-experience profile in the SOS becomes closer to that in other market economy in 1995 and 1999. However, the marginal effect in 1988 and 1995 in the NSOS is opposite to that in 1999. For example, given 15 years of experience, the average return of one additional year of experience in 1988 is higher for CCP members than that of comparable NonCCP workers in the NSOS. But it is reversed in 1999.

Gender is positively related to annual earning in each category. However, in the SOS, inferential statistics (see Table 6.8) show that gender does not significantly contribute to CCP workers' earnings in the SOS, while male NonCCP workers have statistically significantly higher earnings than female counterparts. I find that male CCP members do not have significantly different earnings (on average) from their female counterparts at SOS during the three years examined for this study. But, NonCCP workers' gender effect in the SOS even statistically increased from 1988 to 1995 and from 1995 to 1999 as well (See Table 6.9 and Figure 6.2). This indicates that gender is not a key determinant of earnings in the SOS as long as s/he joins the CCP. One potential explanation might be that the difference in occupational positions of CCP members in the SOS is not as big as comparable NonCCP workers and relatively egalitarian payment scheme at SOS guarantees a similar paycheck to workers in similar position.

In the NSOS, male NonCCP workers in the NSOS do not have significantly different earnings (on average) from their female counterparts in the NSOS in 1988, but gender effects in NonCCP/NSOS category become significant in 1995 and 1999 (See Table 6.8). I find a significantly rising gender earning differential for CCP workers and other workers over time[47] (See Table 6.9 and Figure 6.2), which is consistent with findings of Appleton, Song and Xia (2005), who examined aggregate level trends from 1988 to 2002[48]. Bishop et al. (2005) and Gustafsson and Li (2001) find a small increase in the unadjusted gender earnings gap between 1988 and 1995. For example, it is 0.1854 log points in 1988 and 0.2199 log points in 1995 in Bishop et al. (2005). Bishop et al. (2005) find that the unexplained average gender earnings differential slightly increases (from 0.1323 log points to 0.1349 log points) over the same time period, while the ratio of unexplained portion to the total average earnings gap, often viewed as evidence of discrimination declined from 71% to 61%. This decline in discrimination is almost entirely concentrated in the lowest decile of the earnings distribution. It might because higher female returns over time to both education and experience for low earning women. Bishop et al. (2005) also find that low earning workers benefit the most from Party membership and for males this benefit has been growing over time. In contrast, high earning workers gain almost no earnings benefit from Party membership in 1995. They interpret it that Party membership identifies higher human capital among low education, low earning workers.

Another recent study finds a significant difference in the coefficients of gender between CCP members and other workers' earning equations in 1988 and 1995, but not in 1999 (Appleton, Knight, Song and Xia, 2003).[49] In this dissertation paper, a pair-wise inference test[50] was used to compare coefficients of the corresponding variables between CCP members and other workers in each sector. Results in Table 17 show that at SOS, the gender differential of CCP workers is significantly smaller than that of other workers,

[47] I use pair-wise inference test to compare the coefficients over every two years. Table 16 shows the results of inference test.
[48] Appleton, Song and Xia (2005) examined the gender effect in the whole CHIP sample, rather than breaking it down by ownership sectors.
[49] Appleton, Song and Xia (2003) do not consider endogeneity of both CCP membership affiliation and ownership sector choices.
[50] Assuming the independent samples, the inference test statistic is (b1 – b2)/squareroot(v1+v2).

particularly in 1988 and 1995. Compared to the CCP gender differential of 2.7% in 1988 and 5% in 1995 (neither is statistically significant), male NonCCP workers have a significantly higher average earning than their female counterparts by 9.7% in 1988 and 14% in 1995 at 5% significance level. The difference in gender coefficients is statistically significant at 5% significance level for both years, respectively. Again, it might because the difference in occupational positions of CCP members in the SOS is not as big as comparable NonCCP workers for both years and relatively egalitarian payment scheme at SOS guarantees a similar paycheck to workers in similar position. But, the gender effect gets closer in 1999. It rises for CCP members in 1999 while declines for other workers, which make no significant difference in gender coefficients of these two groups.

In the NSOS, there is no such statistically different gender effect during either of the three years examined by this study. Compared to SOS, we find greater gender earning differentials at NSOS for CCP members and other workers during the three years examined, with the exception of NonCCP workers in 1988. This is consistent with the findings of other studies that show the NSOS have a larger log gender wage gap than SOS, since SOS is less privatized than NSOS (Liu, Meng and Zhang, 2000; Zhang, 2004). The pair-wise inference test (See Table 6.10) in the dissertation paper shows that the difference in the coefficients of gender between the two sectors is statistically significant for CCP members during both 1988 and 1999, while for other workers the difference across the two sectors is only statistically significant in 1999.

For example, male CCP members at SOS have a 6.4% higher annual earning than female members in 1999, compared to a 37% gender earning differential for CCP members at NSOS. The gender earning gap for NonCCP members in 1999 is 8.6% at SOS, while it reaches as high as 25.1% at NSOS.

NSOS in urban China was still at the rudimentary stage in 1988, and as discussed in the previous section, UCEs were a major component of NSOS. Given the egalitarian ideology in the whole society since the liberation of China, the equality of men and women was strongly advocated in both sectors. The reward system in the NSOS differed from that in the SOS in terms of more autonomy and in terms of reward according to performance, but not in terms of gender discrimination. It is not surprising to see little

difference in gender effects across these sectors during that time. But when compared to NSOS in 1999, which has been further privatized, less autonomy at SOS results in a relatively more equalizing wage structure between male and female workers.

Regarding the ethnic effect on workers' earning in urban China, two-stage estimation does not present statistical evidence that earning discrimination exists between Han and Minority in urban China during the three years examined in this study. It is consistent with the findings of other studies which examined earning determination in urban China. Appleton, Song and Xia (2005) found a much smaller discrimination against ethnic minorities exists than in other countries.

6.4 Education Effects

Another coefficient comparison of interest occurs between educational levels. We find that workers' earnings increase with human capital investments, but the returns from these investments are not always consistent over time or across sectors. Most studies using "years of schooling" in the wage equation find low rates of return for one additional year of schooling in urban China (Li, 2003; Zhang, 2004; Fleisher & Wang, 2004).

For example, Li (2003) uses the same 1995 CHIP data and found the rate of return to be 5.4% without controlling for the sample selection. Zhang (2004) found that the rate of return is highest in private/individual-owned enterprises (4.3%), and lowest in urban collective enterprises (2.4%), while utilizing selection correction in the employment ownership sector choices[51]. Knight and Song (2003) use CHIP 1988 and 1995 data and include educational level dummies in the earnings function for individual workers in Urban China. They find that the returns to education rose dramatically between 1988 and 1995. For example, the earnings difference between college graduates and primary school-leavers, ceteris paribus, was 9 percent in 1988 and 38 percent in 1995. It suggests that market forces have come more important in certain respects. Although the present study secured a relatively small sample size for the third choice group (CCP/NSOS),

[51] Zhang (2004) uses the years of schooling in 1995 CHIP data instead of educational level to study the structural wage differentials, because the limited number of observations in a certain sector with a certain educational level may not provide reliable sector-degree-specific returns to education.

"educational level" will still be used as a variable to capture nonlinear education effects. The analysis for how education determines earnings by categories will be presented in the following section.

6.4.1 CCP Members and Other Workers at State-owned Sector

Column (2) and Column (3) in Tables 6.11[52] show that in 1988, all educational levels have different returns in the SOS as opposed to omitted education level, or "junior high school education or less", with higher education yielding higher returns to both CCP members and other workers. But in 1995 and 1999, for CCP members in the SOS, only college education matters statistically. Figure 6.3 illustrates these coefficients of each education level dummy for the CCP/SOS and NonCCP/SOS categories.

6.4.1.1 Horizontal Analysis across Categories

Coefficient comparisons were conducted for each educational level between CCP and NonCCP members at SOS. In this dissertation, median to high educated workers are divided into three groups: those who had a professional school education, two years of college education, or a minimum of four years' college education. The findings in Table 6.12 indicate that the earning differential of CCP members at each of three high educational levels is statistically smaller than that of comparable NonCCP workers in this sector in 1988 and in 1995.

For example, in 1988, the earning differentials between CCP members with four years of college education (or more), two years of college education, professional school completed, and those in the "omitted education" group are 16.7%, 11.3% and 5.1% at SOS respectively, compared with 29.3%, 19.8% and 12.6% earning differentials for NonCCP workers. This implies that a median- to high level of education is more important in terms of raising earnings to workers that are not CCP members in 1988 and 1995. However, the contribution of median- to high education to CCP workers' earnings at SOS does not lead them to be statistically different from other workers. Only a four-year college education makes the earnings gap for other workers statistically larger than

[52] All the coefficients of education dummies could be found in Table 6.4 – 6.6 too.

for CCP workers in 1999. The difference in returns between median- educational levels and the omitted group is getting closer for CCP members and other workers in SOS.

6.4.1.2 Vertical Analysis over Time

For the three years examined in this study, the returns (in percentage term) to CCP members with two years' college education (or more) at SOS are all significantly different from those with junior high school education or less (See Table 6.11).[53] Figure 6.4 illustrates coefficients of education level dummies for the CCP/ SOS and NonCCP/SOS by years. At SOS in 1998, CCP members with four years of college education (or more) receive a 16.7% (21.9% and 35.5%) higher annual earning than those with junior high school education or less (1995 and 1999). When compared to CCP workers in the "omitted education" group, returns are 11.3%, 13.8% and 27.7% higher (for our three years respectively) for CCP workers with two years of college education. Tables 6.13 and 6.14 show inferential testing results for the coefficients of CCP members and other workers across two years, respectively. For CCP workers in the SOS, the different returns for college education do not statistically change from 1988 to 1995 or from 1995 to 1999. Only the coefficients for college education from 1988 to1999 are significantly different, with 1999 being higher[54].

Each educational level attained by NonCCP workers at SOS leads to a significantly different return when compared to those in the omitted group. Interestingly, the coefficients for "two years of college education" and "four years of college education (or more)" dummies in NonCCP workers' earning equation at SOS increase significantly over time.

For example, compared with the omitted education group, the return is 29.3% higher for those with four years' college education (or more) in 1988, and then it significantly increases to 38.3% and 61.6% in 1995 and 1999, respectively. The coefficient for professional school dummy significantly increased from 1988 to 1995, as did that for senior high school dummy from 1995 to 1999.

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[53] The individuals with junior high school education or less are in the omitted education group.
[54] We use pair-wise inference test to examine the differences in the coefficients of the same education level dummies across any two years.

This pattern indicates that the investments of human capital did play an increasingly important role in the earning structure for NonCCP workers at SOS throughout three stages of economic reforms. However, the change in impact of human capital on CCP workers' earnings was neither as quick nor as strong as it was for NonCCP workers at SOS.

6.4.2 CCP Members and Other Workers at Nonstate-owned Sector

Column (4) and Column (5) in Table 6.11[55] shows that, in NSOS in 1988, all the educational attainment except for having a professional school education yield significantly different (higher) returns for CCP workers than having a junior high school education (or less). The impact shifts to professional school and senior high school education in 1995. Having a college education still brings a large return for them in this year although the coefficients are not statistically significant. More interestingly, only four years of college education (or more) yields significantly different returns than junior high school education (or less) for CCP/NSOS workers in 1999. Statistically, the coefficients of two-year college education and professional school education are not significant in this category, but they still show a much higher return compared with that of junior high school education (or less). In 1998 however, none of the educational levels have statistically different returns for other workers in NSOS, as opposed to the omitted group. But all educational levels had significantly higher returns for NonCCP workers than did "a junior high school education (or less)" in 1995 and 1999.

The influence of a gradual economic market reform on NSOS from the years 1988 to 1999 is worth noting. During the first ten years of the economic reform, urban collective enterprises (UCEs) were the major component of NSOS, and existed alongside a small number of private/individual/foreign-owned enterprises known as "urban private enterprises" (UPE).

UCEs accounted for 92.5% of the enterprises at NSOS in the 1988 CHIP sample. UCEs were officially intend to both soak up surplus labor in urban cities, available because of limited educational opportunities for the growing number of senior high

[55] You can also find the coefficients of education dummies in Table 6.4 – 6.6.

school graduates, and to meet social needs that were insufficiently being addressed by the SOS. This was especially true in the construction, catering and consumer goods production sectors. The NonCCP workers who were recruited into NSOS were mainly those with a senior high school education or less. This proportion reaches as high as 94.8% in 1988. In these entities, employees with a higher level of education do not play a dominant role in the earning structure at the initial stage of the economic reform.

Two-stage estimation in the 1988 CHIP sample indicates that having more than a senior high school education does not lead to significantly different returns for NonCCP workers when compared to those with less than senior high education at NSOS. As far as CCP members at NSOS are concerned, only the college education matters. For example, in 1988, only CCP members with two and four years' college education (or more) at NSOS have significantly higher annual earnings (25.4% and 19.6% respectively) than CCP members in the base group.

The growth of UCEs since 1979 has been the result of necessarily using limited local resources due to limited financial assistance from the central authorities. They are also under competitive pressure from booming job opportunities of other UPEs. Especially after Deng Xiaoping's 'southern tour' in 1992, more jobs started to shift toward UPEs, and UCEs' employment declined gradually over the next few years. The proportion of UCEs in NSOS slightly declined to 83.4% in 1995. However, the dramatic shrinkage of UCEs in 1998 led to a third decline in total employment, shrinking to 44.5% in the 1999 CHIP sample.

UCEs differ from both SOS and UPEs. They serve as a transitional form between the private and the State-owned the means of production. "UCE is theoretically an independent unit whose members have an equal right of ownership of the means of production and the products of labor" (Tang & Ma, 1983). They are not directly under the administrative or financial support of the state or provincial government. They are often sponsored and supervised by local governments (such as district/county government or residential offices) to obtain the assets.

Since UCEs enjoy the least redistributive benefits and have much less access to official bank credit, they are encouraged to remain closer to market-oriented transactions.

As the market-oriented economy develops and matures over time, a higher education is gradually being recognized as an indicator of higher productivity and efficiency. Therefore, “level of education” starts to play an important role to NonCCP workers in 1995 and 1999.

The data in the present study show that almost all educational levels demonstrate significantly higher returns when compared to omitted educational level. But since there are far fewer CCP members at NSOS, we find that the impact of differing educational levels is not as large as expected. For CCP workers in NSOS, professional school education or senior high educational level led to significantly higher returns than omitted educational level in 1995, while only four-year college education does so in 1999.
In the previous subsection, there is strong evidence that investments in human capital play a more and more important role in the earning structure for NonCCP workers at SOS over time, but are not nearly as quick for CCP members at SOS. In this section, the coefficients of each education level dummy at NSOS across three years will be compared to examine if NSOS presents a similar pattern.

6.4.2.1 Vertical Analysis over Time

Figure 6.5 does show a change on the impact of educational level on workers’ earning at NSOS during the three years examined in the present study. Table 6.15 and 6.16 present the inference test over time for the CCP/NSOS and NonCCP/NSOS categories, respectively. All educational levels have significantly higher returns to NonCCP workers in 1999 than those in 1988. There are statistically significant increases in the rate of returns to NonCCP workers in NSOS with college education and professional school education from 1988 to 1995.

For example, in 1988, NonCCP workers with four years of college education (or more) at NSOS receive a 14.4% lower return than those with junior high school education or less, but they made 50% more in 1995. Compared to returns of junior high school education or less in NSOS, only differences in returns for NonCCP workers with senior high school education statistically increase from 8.3% in 1995 to 21.6% in 1999.

For CCP workers in the NSOS, only the difference in the returns to professional school education is statistically significantly increasing from 1988 to 1995.

6.4.2.2 Horizontal Analysis across Categories

Comparison across categories in the NSOS shows that the coefficients of all education dummies for CCP workers are greater than those for other workers in 1988, while the return for each educational level of CCP members is not as great when compared to other workers in 1995 and 1999 (See Figure 6.6).

For example, in 1988, the return for CCP workers in NSOS with four-year college education (or more) is 27% higher than for those in omitted group, while NonCCP workers in NSOS with the same educational level earned 14% less during the same year. A similar pattern is shown for two-year college graduates in 1988. The inference test conducted on the 1988 data indicates they are significantly different (please see Table 6.17). Additionally, in previous subsection it is noted that higher education usually has higher returns for CCP/NSOS workers. These findings suggest that education and Party membership are complements at NSOS in the early stages of economic reform.

Since 1995, higher education level has been associated with bigger coefficients. Although the coefficients of college education dummies for NonCCP workers have been numerically exceeded those for CCP workers in NSOS. The pair-wise coefficient differences at each educational level between CCP members and other workers in NSOS are not statistically significant. However, I find the returns for CCP members with two years of college education are 13.7% higher than for those in omitted group at NSOS, compared with 50% for NonCCP workers at NSOS in 1999. The inference test in Table 6.17 shows that this differential is statistically significant at 5% significance level. Meanwhile, in 1999, the pair-wise coefficient differences between CCP members and other workers with a senior high school education at NSOS are also statistically significant.

On the one hand, these results indicate that the different returns brought about by the different educational levels became more significant to NonCCP workers in NSOS over

time. On the other hand, the results indicate that political capital and human capital became neither complements nor substitutes in the NSOS in the late 1990s.

6.4.3 Workers in State-owned Sector and Nonstate-owned Sector

Another concern is if the returns for different educational levels differ across different ownership sectors. Using "less than senior high school education attained" as the base group, the empirical evidence says *no* to this question in most comparisons. For example, in Table 6.18, the pair-wise comparisons of coefficients for each educational level that CCP members attained at SOS versus those attained at NSOS do not show statistically significant differences in either of the three years, except for those with professional school education in 1995[56]. Figure 6.7 shows the coefficient of each educational level dummy for the CCP/NSOS and NonCCP/NSOS categories in three years, respectively. Comparing the rewards for those in the base group, the different rewards for CCP members with a professional school education are statistically lesser in the SOS than in the NSOS in 1995. These findings suggest that the impact of human capital on CCP workers' earnings does not change much across sectors.

We find a similar pattern when comparing NonCCP workers at SOS and NSOS in Table 6.19 and Figure 6.8. Most differences appeared in 1988 only. In 1988, NonCCP workers with junior high school education (or less) have higher returns in the NSOS than median to high educated NonCCP workers. Comparing to junior high school education (or less), the returns for college education and professional school education in SOS are significantly higher than the returns in NSOS in 1988. The impact of human capital on NonCCP workers' earnings does not change much across sectors in 1990s. There is no statistical evidence that the different rewards for NonCCP workers in the base group and those with other educational levels are different across the two sectors in 1995 and 1999, with the exception of 1999, which favors NSOS for those with senior high school education attained. [57]

[56] The returns to CCP members with professional school education at SOS is 7% more than those with junior high school education (or less), while the difference in returns to those at NSOS is 25.5% in 1995.
[57] NonCCP workers at SOS with senior high school degree have 11.6% higher rate of returns than those with junior high school education (or less) in 1999, compared with 21.6% difference at NSOS. And this

In previous subsections, the results on the earnings equation show a larger wage differential between females and males in the NSOS and larger return to educational attainment for NonCCP workers than that for CCP workers. It is possible that the restrictions on migration in the urban labor market make it less competitive so that the wage adjustment is not fully driven by market forces. Before the economic reform, the state controlled labor placement by labor bureaus at all levels. The unified labor placement process 'began with the central and local government's annual plan for labor quotas. Then, these quotas were distributed to relevant industrial bureaus, which allocated them to enterprises under their jurisdiction… enterprises were not allowed to hire new workers without allocated labor quotas' (Ding and Warner 2001). Under the central-planning system, mobility among urban workers was negligible. A series of reforms on the employment system in the SOEs directed at gradually moving towards a market-oriented system by replacing the state job assignment by limited labor contracts for new employees and finally by a comprehensive labor contract system with a market-oriented system. Although workers were granted more rights to move from one employer to another, voluntary mobility continued to be impeded by institutional barriers such as the household registration system (*hukou*) and the employer-specific provision of social welfare services. The household registration system (*hukou*) prohibits individuals from moving from one city to another, and from rural to urban areas. The SOEs and administrative institutions in the SOS usually tied social welfare services such as pensions, medical care, and housing to the employment which were gradually being privatized. In the meantime, the speed of implementation of the reform policies varies by regions and by industries. By the end of 1990s, mobility from NSOS to SOS was still low although some SOEs started to externally recruit experts with special skills such as those who are proficient in the computer science. The employees in a SOE were usually hesitated to voluntarily quit a job and move to another city because it was almost impossible for them to be recruited by another SOE if their *hukou* could not be resolved. It was hard to have an official document approved by the corresponding local bureau

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pair-wise comparison of two coefficients shows a statistically significant difference at 10% significance level.

which would guarantee a move without losing associated labor quota and relevant non-market facilities in the SOS. Under this circumstance, the private costs on quitting are significant for the workers in the SOS. However, the rapid development of NSOS created opportunities and pressures to encourage migration from the interior to the coast, not only including rural-urban migration but also urban-urban migration. In meanwhile, it provided incentives for officials not to enforce regulations on such a migration. Although an individual is technically required to live in the area designated on his/her permit under *Hukou* system, in practice the system has gradually broken down. It became possible for some to unofficially migrate and get a job without a valid permit. But it usually happens for those who move to work in the NSOS. Knight and Yueh (2004) find that the mobility rate of urban workers is much lower than that of rural-urban migrants by using 1999 CHIP data with additional migrant households. In their data, the majority of urban workers in their sample have had only one employer and the job turnover might mostly occur internally. Wage adjustment may have been impeded by the restrictions on migration, but probably less so for the later period and for the NSOS.

6.5 Robustness

6.5.1 Five Common Provinces vs. All Provinces during the Three Years

The geographic provinces and cities covered in three CHIP sample data are not exactly the same. There are only five common provinces over the three years, which are Beijing, Gansu, Henan, Jiangsu and Liaoning.[58] In Chapter 6, the two-stage estimation results are reported with all the provinces included. This approach has also been applied to each specification with only five common provinces as robust tests. Basically, the coefficients are robust in each year. Since it is believed that the larger sample size provide more precise estimates, all the provinces are included in the present study.

6.5.2 Economic Sectors across Sectors

In the first stage, the sectors (SOS, NSOS) in dependent variable are ownership sectors. It is determined by responders' choices to the question, "Ownership of primary

[58] More information is provided on Table A.1 in Appendix A.

workplace". In both the first stage and the second stage, independent variables include economic sector dummies. The economic sectors are determined by responders' choices to the question, "Economic sector codes for the primary work unit". There was a concern of endogeneity of economic sector dummies if not all economic sectors existed in two ownership sectors.

The data show that all economic sectors exist in both ownership sectors.[59] For example, a firm in the health sector could be a state-owned firm or a Non-state owned firm. But percentages of each economic sector in the two ownership sectors vary widely. Further, a robust test was conducted by excluding economic sectors dummies from the two stage estimation, and was checked for important changes in the economic interpretation of the coefficients. It was found that exclusion of economic sectors did not significantly change the economic significance of the coefficients.

6.5.3 Bootstrap Standard Errors in Two-stage Estimation

Two-stage estimation allows us to examine the earning functions given polychotomous choices. The general standard errors in the second stage are not consistent due to the heteroskedastic disturbance term and inclusion of parameter estimates from the first stage in this disturbance term. To correct for these standard errors, the bootstrap techniques were used in the two-stage estimation. It was found that most standard errors are biased downward with bootstrap, although the magnitudes were not terribly different.

6.5.4 Specifications in the two-stage estimation

In the earning equations, the individual characteristics include the years of experience and the four education level dummies. The other three specifications were also tried with "age and years of schooling", "age and education levels", "years of experience", and "years of schooling", respectively. Although the significance of the mill's ratios is the same in most specifications, education level dummies were used to capture the nonlinear education effects in the earning equation.

[59] Distribution of Economic sectors by ownership sectors is shown on Table D.1 in Appendix D.

6.5.5 Robustness Test on Instrument Variables

Identification frequently is an issue for selection problems. The description of identification variable is in Chapter 5. I have conducted robustness test on the instruments by comparing results with only functional form identification to those with exclusion restrictions for the year 1995 and 1999. Given multiple candidates of identification variables in 1999, I tried other combinations including parental Party membership affiliation and parental years of schooling or the nature of recruitment only. The coefficients of inverse mill's ratio from different specification are quite similar. It indicates that the identification variables considered in the paper are robust.[60]

6.6 Decomposition of Earning Differential

In the following subsection, selection-corrected estimates were used to decompose the earning differentials between CCP worker and other worker in both sectors.

6.6.1 Decomposition of Earning Differential in State-owned sector

To sort out the impact of selectivity bias on earning differentials, the percentage of the total earning differential were calculated due to differences in coefficients (including constant terms), mean endowments and selectivity bias (coefficient and mean effects were lumped together). The selectivity bias indicates, for this sample of workers, the impact of unobserved traits – those that impact individuals' political membership affiliation, their ownership sector choices and also their earnings – on the earning differences between two groups of workers.

Since the inverse of Mill's ratio in the earning equation of NonCCP workers at SOS is statistically significant, the analysis focused on the decomposition result in column, "Two-stage with selection effects" in each panel of Table 6.20. Figure 6.9 illustrates the components of earnings differential and the proportion of each component in three years.

Panel a in Table 6.20 shows that the total earning gap between CCP and NonCCP workers at SOS is 24.72% in 1988, which means the average worker who self-selects to be a CCP member at SOS earns 24.72% more than the average worker who self-selects to

[60] Additional information is shown in Appendix H.

remain as a NonCCP worker. Column "Two-stage with selection effects" in Panel b and Panel c shows the total differential rises to 30% in 1995 and 1999.

The 1988 result indicates that the positive CCP-NonCCP earning differential favoring CCP members in the SOS is mainly due to the coefficient differential, which is the result of higher returns to the characteristics of CCP workers in the SOS. It accounts for 69% of total earning gap in 1988, which is over one and one-half times as much as the earning gap explained by differences in the endowments (36% of total earning gap). This implies that the differential evaluation of characteristics of CCP and other workers by their employers is a bigger contributor to the earning gap than are differences in the mean measured characteristics of the different group of workers in 1988. It is interesting to note that the “standard” procedure for investigating CCP-NonCCP earning differentials at SOS implicitly constrains the coefficients to be equal across two categories. Yet, I can find that differential attributes of CCP and other workers in the SOS contribute less to the earning gap than the differential evaluation of these attributes by employers based upon their political membership affiliation. Hence, the practice of simply introducing CCP membership dummies obscures an important source of observed earning differentials, regardless of whether CCP membership affiliation is treated as endogenous.

However, a Party premium in favor of CCP members due to the varying returns to observables for CCP and other workers in the SOS decreases from 1988 to 1999 (See Figure 6.9). The coefficient differentials contribute much less (19.4%) to the total earning differential in 1995, and became negative in favor of other workers in 1999. Meanwhile, the differences in the characteristics of both groups of workers became more important to the total earning differentials at SOS over time. The contribution of the endowments differential increases significantly to 57% in 1995, and to 66% in 1999.

Positive selection differential explains 24% of the total earnings differential in 1995, and 54% in 1999. Comparing the total earning gap in the column labeled "Two-stage net of selection effects" to the total earning gap reported in the column "Two-stage with selection effects", we find that the selection correction slightly increases the earning gap in 1988, while it substantially decreases the earning gap in each of the comparisons in 1995 and 1999. The selection effects in CCP/SOS workers’ earning equation are all

negative in 1988 and 1995. This means that, in 1988, the predicted earning for CCP/SOS workers is greater if their membership and ownership form of work unit are not known than if their choice is known. The opposite is true for CCP workers in the SOS in 1999, since they have positive selection. Knowing the worker would choose the CCP/SOS category actually increases the predicted earning in 1999. For other workers in SOS, the selection effect remained negative for each of the three years being studied. The combined effect is that the earning gap and net of selectivity were larger than the observed earning gap in 1988, but smaller in 1995 and 1999. In this dissertation, the sum of coefficient differential and selection differential is called 'unexplained differential'. Figure 6.10 shows that the unexplained Differential decreases in the SOS from 1988 to 1999.

The education level dummies are usually used to capture the skill differentials between CCP members and other workers. At SOS, it is expected that the returns of higher education are greater for CCP workers than those of other workers since they are more likely to have stronger educational backgrounds and will be recruited into the Party. Total earning differentials favor CCP workers in SOS during the three years examined, while sum of endowment and coefficients differentials (for all educational levels) indicate the total educational effect is smaller for CCP workers when compared to other workers.

Meanwhile, Table 6.21 shows that 9.3%, 12%, and 26% (respectively) of the total earning gap is due to endowment differentials of all education dummies when they are evaluated via returns to a CCP/SOS worker during the aforementioned three years. The percentage of total earning gap due to endowment differential at each educational level rises with each respective educational level. Take the numbers in 1988 for example; 6% of the total earning differential is due to the endowment differential at the four-year college level, 3.7% is due to the endowment differential at the two-year college level, and only 1.1% at professional school level.

However, the idea that higher education increases returns to CCP workers (as opposed to other workers) is refuted by the negative contribution of the coefficients, and by the lack of a tier pattern in the coefficient contributions. This implies that NonCCP

workers at SOS have a greater educational impact than CCP workers do in terms of varying returns to observables.

The other two earning-gap measures may also be of interest because they provide a good prediction of the earning gap given that we know that the individual has chosen one of the alternatives. Both are called "coefficient differentials", and are reported in the columns labeled, "Two-stage without selectivity" and "Two-stage with selectivity" on Table 6.22 and Table 6.23, respectively. Figure 6.11 illustrates these numbers. The implied log earning gap for an individual who has sorted into NonCCP/SOS category is given by:

$$\text{Earning Gap at SOS} \mid \text{NonCCP at SOS} = E(\ln W_{CCP/SOS} \mid X_{NonCCP/SOS}) - E(\ln W_{NonCCP/SOS} \mid X_{NonCCP/SOS})$$
$$= (\beta_{CCP/SOS}' \overline{X_{NonCCP/SOS}} + \delta_{CCP/SOS} \overline{\hat{\lambda}_{NonCCP/SOS}}) - (\beta_{NonCCP/SOS}' \overline{X_{NonCCP/SOS}} + \delta_{NonCCP/SOS} \overline{\hat{\lambda}_{NonCCP/SOS}})$$

where we take the mean characteristics of NonCCP workers at SOS as the reference. This earning gap with selectivity is called "coefficient differentials", and is reported in the column labeled, "Two-stage with selectivity".

Similarly, the implied log earning gap for an individual who has sorted into CCP/SOS category is given by:

$$\text{Earning Gap at SOS} \mid \text{CCP at SOS} = E(\ln W_{CCP/SOS} \mid X_{CCP/SOS}) - E(\ln W_{NonCCP/SOS} \mid X_{CCP/SOS})$$
$$= (\beta_{CCP/SOS}' \overline{X_{CCP/SOS}} + \delta_{CCP/SOS} \overline{\hat{\lambda}_{CCP/SOS}}) - (\beta_{NonCCP/SOS}' \overline{X_{CCP/SOS}} + \delta_{NonCCP/SOS} \overline{\hat{\lambda}_{CCP/SOS}})$$

where we take the mean characteristics of CCP workers at SOS as the reference.

Net of selectivity effects, these earning gaps become $(\beta_{CCP/SOS}' \overline{X_{NonCCP/SOS}} - \beta_{NonCCP/SOS}' \overline{X_{NonCCP/SOS}})$ and $(\beta_{CCP/SOS}' \overline{X_{CCP/SOS}} - \beta_{NonCCP/SOS}' \overline{X_{CCP/SOS}})$, and are reported in the column labeled, "Two–stage without selectivity".

I find that, without the selectivity effects included, an average NonCCP worker at SOS would expect to earn 17% (5%) more if the marginal return is the same as that for a CCP member at SOS than what the average NonCCP worker would experience at SOS in 1988 (1995). Taking selectivity into account, the coefficient differential rises slightly to 17.4% in 1988, but increases significantly to 15% in 1995. However, he/she would expect to earn less in 1999 with exclusion of selectivity, but would earn more with selectivity.

Similarly, in 1988 without selectivity, an average CCP worker at SOS would experience an earning gain of 6% over what the worker would expect to earn if rewarded as a NonCCP worker, with the differential increasing to 6.7% when selectivity effects are included. Although in 1995 and 1999, the coefficient differential net of selectivity indicates that an average CCP worker at SOS would have lesser earnings than what would be expected if the worker was rewarded as a NonCCP worker at SOS, the coefficient differential with selectivity rises to positive numbers during both years. These calculations show that selectivity considerations act to increase the earning differential between CCP and NonCCP workers at SOS because of the different returns to their attributes.

6.6.2 Decomposition of Earning Differential in Nonstate-owned Sector

Table 6.24 shows earning decompositions by using the coefficients of CCP members at NSOS as reference points. Figure 6.12 illustrates the components of CCP-NonCCP earnings differential in the NSOS and the proportion of each component by years. A decreasing earning advantage for CCP members at NSOS was found over time. The total earning differential between CCP members and other workers at NSOS is 34% in 1988, and then it decreases to 27.5% and 24.8% in 1995 and 1999, respectively. The positive coefficient differentials from a two-stage selection correction estimation in 1988 and 1995 indicate that the average NonCCP worker at NSOS earns less than what s/he would earn if s/he is rewarded as a CCP member, and this differential accounts for the largest portion of the total earning gap. However, it decreases from 1998 to 1995, and becomes negative in 1999. Therefore, NonCCP workers would earn less if they are rewarded as CCP workers than what they earn now. This further indicates that CCP is less better off than NonCCP in NSOS from 1988 to 1995 and becomes no better off as NSOS becomes further adapted to the market economy in 1999, which includes a shrinking of UCEs and a booming of UPEs within one decade. In this dissertation, the sum of coefficient differential and selection differential is called ‘unexplained differential’. Figure 6.13 shows that the unexplained Differential decreases in the NSOS from 1988 to 1999.

The analysis of decomposition of educational effects is shown on Table 6.25. Column (4) in Table 6.25 shows that the contribution of endowment differentials of all educational levels toward the positive CCP-NonCCP earning differential in SOS rises over the three years examined. 6%, 12% and 36% of the total earning gap is explained by the different mean proportions of CCP-NonCCP workers with the same educational levels when they are evaluated by returns to CCP/NSOS during each of the three years, respectively.

The percentage of earning gap caused by the endowment effect for each educational level usually rises as people gain more education. The numbers in 1999 for example, when evaluated by returns to educational levels in CCP/NSOS category, indicate that 25% of the total earning differential is due to the difference in four-year college graduates, 9% is due to the difference in two-year college graduates, and only 1.5% is from professional school graduates.

At NSOS, it is expected that returns to human capital of CCP workers were better than for other workers in 1988 and the contribution of coefficient differentials to the total earning gap will be similar across both groups of workers in 1995 and 1999. It was found that 7.5% of total earning differential could be explained by coefficient differentials for all education dummies, and favored CCP workers in 1988, while it decreased to 3.06% in 1995 and becomes negative in 1999. Specifically, the coefficient differentials for college education dummies have turned out negative since 1995, which is due to better returns for two-year and four-year college education in the NonCCP/NSOS group.

Regarding other educational levels in 1995, returns to CCP are better than for NonCCP at NSOS. Since negative CCP-NonCCP coefficient differentials for college educations are dominated by positive ones for other educational levels, aggregated coefficient differentials for all educational levels still favor CCP workers in NSOS. However, CCP workers at each educational level have smaller returns than other workers in NSOS in 1999. The total coefficient differentials of all educational levels become negative (-0.131) as well. The results in all three panels of Table 6.25 help to analyze how education contributes to a positive CCP-NonCCP earning differential at NSOS. Obviously, the contribution of the coefficient differential (across all educational levels) to

the total earning differential decreased from 1988 to 1995, and completely favored NonCCP workers in 1999.

Given that we know that the individual has chosen one of the alternatives, another two types of "coefficient differentials" are reported in the columns labeled, "Two-stage without selectivity" and "Two-stage with selectivity" in Table 6.26 and Table 6.27, respectively. Figure 6.14 shows these numbers for an average CCP worker and an average NonCCP worker in the NSOS, respectively. The implied log earning gap for an individual who has sorted into the NonCCP/NSOS category is given by:

$$\text{Earning Gap at NSOS} \mid \text{NonCCP at NSOS} = E(\ln W_{CCP/NSOS} \mid X_{NonCCP/NSOS}) - E(\ln W_{NonCCP/NSOS} \mid X_{NonCCP/NSOS})$$
$$= (\beta_{CCP/NSOS}' \overline{X_{NonCCP/NSOS}} + \delta_{CCP/NSOS} \overline{\hat{\lambda}_{NonCCP/NSOS}}) - (\beta_{NonCCP/NSOS}' \overline{X_{NonCCP/NSOS}} + \delta_{NonCCP/NSOS} \overline{\hat{\lambda}_{NonCCP/NSOS}})$$

Where we take the mean characteristics of NonCCP workers at NSOS as the reference. This earning gap with selectivity is called "coefficient differentials", and is reported in the column labeled, "Two-stage with selectivity".

Similarly, the implied log earning gap for an individual who has sorted into CCP/NSOS category is given by:

$$\text{Earning Gap at NSOS} \mid \text{CCP at NSOS} = E(\ln W_{CCP/NSOS} \mid X_{CCP/NSOS}) - E(\ln W_{NonCCP/NSOS} \mid X_{CCP/NSOS})$$
$$= (\beta_{CCP/NSOS}' \overline{X_{CCP/NSOS}} + \delta_{CCP/NSOS} \overline{\hat{\lambda}_{CCP/NSOS}}) - (\beta_{NonCCP/NSOS}' \overline{X_{CCP/NSOS}} + \delta_{NonCCP/NSOS} \overline{\hat{\lambda}_{CCP/NSOS}})$$

where we take the mean characteristics of CCP workers at SOS as the reference.

Net of selectivity effects, these earning gaps become:

$(\beta_{CCP/NSOS}' \overline{X_{NonCCP/NSOS}} - \beta_{NonCCP/NSOS}' \overline{X_{NonCCP/NSOS}})$ and $(\beta_{CCP/SOS}' \overline{X_{CCP/NSOS}} - \beta_{NonCCP/NSOS}' \overline{X_{CCP/NSOS}})$, and are reported in the column labeled, "Two –stage without selectivity".

It was found that, without selectivity effects included, an average NonCCP worker at NSOS would expect to earn 63% (23%) more if he or she is rewarded as a CCP member at NSOS than what the average NonCCP worker would experience in 1988 (1995). Taking selectivity into account, this coefficient differential dramatically decreases to 19% in 1988, and to 18% in 1995. However, an average NonCCP worker would expect to earn less in 1999 with exclusion of selectivity, but would expect to earn more with selectivity.

Similarly, without selectivity, an average CCP worker at NSOS would experience an earnings gain of 75% (24%) over what the worker would expect to earn if rewarded as a NonCCP worker in 1988 (1995). This differential decreases to 6.7% (12%) when

selectivity effects are included. Although in 1999, this coefficient differential net of selectivity indicates that an average CCP worker at NSOS would have smaller earnings than what the worker would expect if rewarded as a NonCCP worker, The coefficient differential with selectivity rises to positive numbers. These calculations show that selectivity considerations act to increase the earning differential between CCP and NonCCP workers at NSOS due to the different returns to their attributes in 1999.

CCP-NonCCP earning differential decompositions within each sector show some important differences between CCP members and other workers. First, the total earning differential at SOS increases dramatically in the early reform period from 1988 to 1995 (24.7% to 30%), and then it levels out (remains at 30%) in 1999 (See Figure 6.15). Second, the CCP-NonCCP earning differential in the NSOS decreases over time from 34% in 1988 to 25% in 1999. Third, the proportion of earning gap in the two sectors, which is explained by endowment differences, is increasing over time; while the unexplained proportion is actually decreasing[61]. Fourth, endowment differentials in SOS consecutively rose during the three years examined in this dissertation paper, while the unexplained differentials[62] went down. But the increase in endowment differentials in SOS was bigger than the decrease in unexplained differentials from 1988 to 1995, while they were tied from 1995 to 1999.

Fifth, endowment differentials in NSOS slightly fluctuated during the three years[63], while the unexplained differentials kept declining over time. But the falling endowment differentials and the unexplained differentials both led the total earning differential to lessen from 1988 to 1995, while a slight rebound for endowment differentials cannot fully set off the falling unexplained differentials from 1995 to 1999.

Sixth, coefficient differentials favoring CCP workers went down from 1988 to 1995 in both sectors, while they become negative in favor of other workers in 1999. This indicates that, for an average NonCCP worker in each category, the economic reform at

[61] Unexplained proportion stands for the proportion of total earning differential which is due to coefficients differentials on observable characteristics and selection differentials.

[62] Unexplained differential is sum of coefficient differential on observable characteristics and selection effects differential. If it is assumed that selection differentials are all due to varying returns to unobserved characteristics, then the unexplained differentials stands for a total coefficient differential on observed and unobserved characteristics.

[63] The coefficients of CCP/NSOS workers are taken as reference coefficients.

SOS and privatization at NSOS made the Party premium disappear due to varying returns to observable characteristics of CCP members and other workers[64].

Seventh, it was observed that the proportion of total earning differential which could be explained by coefficient differentials on observables is declining from 1988 to 1999 in both sectors. Coefficient differentials in NSOS explained a large portion of the total CCP-NonCCP earning gap in the early reform era (from 1988 to 1995).

Eighth, comparing NSOS to SOS, NSOS has a larger log earning gap than SOS in 1988. A greater proportion of the gap in NSOS is attributed to unexplained differential in 1988. Unexplained differential accounts for about 64% of the total earnings gap at NSOS in 1988, while it accounts for 46% in SOS. However, unexplained differential makes slightly more contribution to the total earning gap in SOS than it does in NSOS in 1995 and 1999. The unexplained differential is further broken down into two components: coefficient differential due to varying returns to observable characteristics and selection differential due to different selection effects. A greater proportion of the gap in NSOS can be explained by the coefficient differentials on observables in 1988. The coefficient differential accounts for about 182% of the total log earning gaps at NSOS, whereas it accounts for 69% at SOS in 1988. However, due to further economic reforms in SOS and the booming of NSOS, the contribution of coefficient differentials goes down in both sectors in 1995. The contribution of coefficient differentials becomes much less than that of endowment differentials in SOS, although SOS has a larger log earning gap than NSOS does.

It was found that, in 1995, the greatest proportion of the earning gap at SOS is due to endowment differential, while that in NSOS can be attributed to coefficient differentials. For example, 19% of the total log earning gap at SOS can be explained by differences in varying returns to average observable characteristics of CCP members in 1995, whereas the counterpart at NSOS is 82% of the total log earning gaps. The continued reforms at SOS and the privatization in NSOS tend to minimize favorable returns to CCP members

[64] Earning decomposition is also performed by taking coefficient of NonCCP workers in each sector as reference coefficients. The results show that the coefficient differential in SOS was positive, but it became negative in 1995 and 1999. The coefficient differential in NSOS was positive in 1988 and 1995, but became negative in 1999.

in 1999. Still, SOS has a bigger log earning gap that favors CCP members over NSOS in 1999, but coefficient differential does not contribute to this gap.

Finally, assuming that workers in four categories to be different, the Party premium in the SOS is calculated for an average CCP/SOS worker and an average NonCCP/SOS worker, respectively; and the Party premium in the NSOS is calculated for an average CCP/NSOS worker and an average NonCCP/NSOS worker, respectively. It is found that for an average worker in each group, coefficient differential on observable characteristics of average worker is declining over time. Given that we know the alternative that a worker has chosen, the coefficient differential on unobservable characteristics of average worker is calculated as well. By doing so, the total coefficient differential with selectivity reflects the Party premiums due to varying returns to both observable and unobservable characteristics of an average worker in each group. Figure 6.11 and Figure 6.14 show that the coefficient differential with selectivity falls over time for either an average NonCCP/SOS worker or an average NonCCP/NSOS worker.

6.7 Predicted Earning Differential

6.7.1 Introduction

A simple way to predict earning differential is an OLS regression including categorical variables representing the four sectors. It constrains the coefficients on other variables to be the same across the four alternatives.

Additionally, 'conditional' and 'unconditional' earning differential is calculated via two stage M-Logit OLS procedure. To better understand the distinctions between 'conditional' and 'unconditional' earning differential as defined by Gyourko and Tracy (1988), Party premium in SOS will be used as an example. Suppose we randomly select an individual, who has observable characteristics of an average SOS worker, from the population. Without observing his/her choice of Party membership, the Party premium reflects the differences in returns to his/her observed traits embodied in the "typical SOS worker". Gyourko and Tracey (1988) define such a differential as 'Unconditional' differential. The present study uses $\overline{X_{SOS}}'(\beta_{CCP/SOS} - \beta_{NonCCP/SOS})$ to represent this concept.

However, if each individual's choice of Party membership is known, Conditional Differential controls not only for varying returns to observed characteristics, but also for differentials due to unobserved characteristics - which can be inferred from their choice of Party membership. Given an individual's choice of Party membership, two persons with the same observable characteristics as an average SOS worker could be randomly selected, one from CCP/SOS and the other from NonCCP/SOS. The earning differential between them reflects not only the varying returns to their observed characteristics, but also varying returns to unobserved characteristics or varying levels of their unobserved characteristics. The present study uses $\overline{X_{SOS}}'(\beta_{CCP/SOS} - \beta_{NonCCP/SOS}) + (\delta_{CCP/SOS}\overline{\hat{\lambda}_{CCP/SOS}} - \delta_{NonCCP/SOS}\overline{\hat{\lambda}_{NonCCP/SOS}})$ to represent this concept.

In decomposition of the mean earning in the labor market status j and k:

$$\overline{\ln W_j} - \overline{\ln W_k} = (\overline{X_j}'\beta_j + \delta_j\overline{\hat{\lambda}_j}) - (\overline{X_k}'\beta_k + \delta_k\overline{\hat{\lambda}_k})$$

$$= (\overline{X_j}'\beta_j - \overline{X_k}'\beta_k) + (\delta_j\overline{\hat{\lambda}_j} - \delta_k\overline{\hat{\lambda}_k})$$

$$= (\overline{X_j}' - \overline{X_k}')\beta_j + \overline{X_k}'(\beta_j - \beta_k) + (\delta_j\overline{\hat{\lambda}_j} - \delta_k\overline{\hat{\lambda}_k})$$

where the estimated β s are two-stage selection corrected estimates.

The second component, $\overline{X_k}'(\beta_j - \beta_k)$, is generally called "coefficient differential", and indicates varying returns to common observable characteristics. The third term, $\delta_j\overline{\hat{\lambda}_j} - \delta_k\overline{\hat{\lambda}_k}$, is the difference in mean selection effects across two labor market statuses. In the absence of selection effects, the third term is zero and the second term is identical to the unconditional differential as defined above. In this circumstance, individuals are selected from the population at random and each individual's choice is not observed. Unconditional differential only controls for the differences in returns across status to a given set of observable traits of an average worker.

If a self-selection bias exists, the third term is not zero. It indicates for our sample of workers, the impact of unobserved traits – those that impact individuals' political membership affiliation, their ownership sector choices, and their earnings – on the

earning differences between workers in labor market status j and k. The selection-effects differential could arise from differences in returns to some common unobserved productivity of the workers across two statuses, and also to differences in the levels of unobserved traits of the workers in each status as well.

Conceptually, if the desired earning differential is meant to reflect varying returns to both observed and unobserved characteristics conditional on the selection process, only the coefficient differential and the part of selection-effects differential that represents a differential return to common unobserved characteristics should be included in the calculation. However, it is not feasible to decompose the selection-effects differential as having been done for observable characteristics. Calculating the correct differential is problematic without any assumptions. In this dissertation, both unconditional and conditional differentials with corresponding assumptions are presented. Under an assumption that the selection effects differential represent solely varying levels of unobserved characteristics, the unconditional differential could be appropriately interpreted. In contrast, the conditional differential is interpretable by assuming that the selection-effects differential arises only because of varying returns to unobservable productivity.

6.7.2 Predicted Party Premium in State-owned Sector and Other Sectors

One simple OLS regression is presented in Table 6.28. Given the same parameters of other variables, the difference in the coefficients of alternative dummy variables CCP/SOS and NonCCP/SOS gives the Party premium in the SOS.

Table 6.29 and Table 6.30 predict the 'conditional' and 'unconditional' earning differential between what an average worker would earn if his/her return is the same as CCP worker's in one sector, and what s/he would earn if s/he is rewarded as a NonCCP worker in the same sector during the three years examined. The Party differentials are calculated using the mean characteristics for current workers within the specific category being considered (such as mean characteristics of an average worker in the full sample,

those of an average male in the full sample and so on). The results in the 'OLS'[65] and 'Two-stage conditional' columns are very close, so the focus will remain on the Two-stage conditional and unconditional earning differentials.

For an average worker in the full sample, the conditional Party premium via Two Stage M-Logit OLS procedure presents a similar pattern in each sector as the simple OLS results (See Figure 6.16). For example, the Party premium in the NSOS decreases from 1988 to 1999, while it rises in the SOS during the same time period. However, with controlling for selectivity and allowing different parameters for each alternative, Two Stage M-Logit OLS procedure generates higher Party premium in each sector. In the following analysis, I look into conditional earning differential in each sector.

Figure 6.17 illustrates the 'conditional' and 'unconditional' earning differential in each sector. Table 6.31 shows the selection effects of an average worker in each category. When the total selection-effect differential is interpreted as representing varying returns to the unobserved characteristics, the conditional earning differential in SOS remains at a stable level, reaching 11% in 1998 and 1995, and then rising slightly to 12% in 1999. In contrast, the unconditional differential in SOS presents a decreasing trend over time. It was 15% in 1988, decreasing to 5% in 1995, and then to -7% in 1999. If an average worker would self-select to be a CCP/SOS worker, s/he has a negative average selection effect (-0.09 in 1988). Too, s/he would have a slightly larger average negative selection effect (-0.04) if s/he self-selected to be a NonCCP/SOS worker.

When calculating the conditional earning differential in 1988, the expected Party earning is reduced more than the expected earning of other workers in SOS by the average selection effect differential, thus lowering the reported Party earning differential at SOS. When calculating the unconditional differential at SOS, the expected earning differential is not reduced by the average selection effect differential because it is assumed that the selection effect differential solely represents varying unobserved characteristics. This is why the unconditional differential estimates in SOS exceed the conditional differential estimates in 1988. An average worker had a negative selection effect (-0.07) in 1995, and a positive selection effect (0.07) in 1999 if he/she self-selected

[65] The column 'OLS' shows the predicted party premium via OLS regression in each alternative, rather than one simply OLS regression including alternative dummies.

to be a CCP/NSOS. However, s/he had a significant negative selection effect (-0.13) during both years if self-selected to be in NonCCP/SOS. When calculating the conditional earning differential of both years, the expected earning differentials are increased by the positive average selection-effect differential, thus raising the reported Party earning differential at SOS.

For an average CCP-NonCCP worker, the conditional CCP-NonCCP earning differential at SOS shows a small increasing trend over time, while it shows a decreasing trend at NSOS, from 20% in 1988 to 3% in 1999. The NSOS Party premium is bigger than SOS Party premium in 1988, and roughly same in 1995. But it was much less than SOS Party premium in 1999.

The change in the composition of NSOS over time provides some explanation of this point. During the first ten years of the economic reform, urban collective enterprises (UCEs) were the major component of NSOS. UCEs accounted for 92.5% of NSOS in 1988. 95.5% of CCP members in NSOS are from UCEs. The 1988 results indicate that Party membership was an important reward-factor in UCEs at that time. Firms in NSOS started to explore a market-oriented operation in 1980s, and to large extent, the administration of UCEs still mimicked the SOS's. Without knowing exactly how to better define and measure individual productivity, Party membership might screen for certain ability (at least political ability) in the rewards system. Additionally, only 8.8% of the workers in NSOS were CCP members in 1988, and 9.1% of the workers in UCEs were CCP members. This is much smaller than the 28% in SOS, making the Party membership scarcer, and therefore better rewarded.

After Deng Xiaoping's 'southern tour' in 1992, more jobs started to shift toward UPEs, and UCEs' employment declined gradually over the next few years. The proportion of UCEs in NSOS went down to 83.4% in 1995, and shrank to 44.5% in 1999. The percentage of CCP workers in both sectors increased in 1995 and 1999. In NSOS, it went up to 11% in 1995 and 17% in 1999. Specifically, 9%, 12% and 17% of workers in UCEs were CCP workers during these three years. Too, the percentage of CCP workers in other NSOS entities rose as well, from 5.3% in 1988, to 7.2% in 1995, to 16.8% in 1999. Still, in 1995, 89% of CCP members in NSOS were from UCEs. This number fell

to 44% in 1999. The 1999 results show that NSOS generated only a quarter of the conditional earning premium for Party membership as SOS did, indicating that the political capital became less important in the payment scheme in UCEs, and that it was not accounted as a key factor of productivity in other enterprises at NSOS.

By assuming that the selection-effect differential solely represents varying levels of unobservable characteristics, the unconditional differential in NSOS gives us a slightly different picture. The unconditional differentials at NSOS show that NSOS generated a relatively larger earning premium for the Party members in 1988 (0.84) and 1995 (0.24), but for the other workers in 1999 (-0.24).

Considering the NSOS Party differentials in 1988 and 1995, if an average worker would self-select to be a CCP/NSOS worker, s/he has a negative average selection effect (-0.07 in 1988 and -0.13 in 1995). On the other hand, the worker would have a large positive selection effect (0.57) in 1988, and an almost zero selection effect (-0.01) in 1995 (on average) if s/he self-selected to be a NonCCP/NSOS worker.

When calculating conditional earning differential in 1988 and 1995, the expected Party earning is reduced by the average selection effect of Party workers, while the expected earning of others workers in NSOS rises by the average selection effect, thus lowering the reported Party earning differential at NSOS. When calculating the unconditional differential in NSOS, the expected earning differential is not reduced by the average selection-effect differential because it is assumed that the selection effect solely represents varying unobserved characteristics. This is why the unconditional differential estimates exceeded the conditional differential estimates in 1988 and 1995. An average worker had a positive selection effect (0.21) if s/he self-selected to be a CCP/NSOS in 1999. However, s/he had a small negative selection effect (-0.06) if in NonCCP/NSOS.

When calculating the conditional earning differential in 1999, the expected Party earning is increased by the positive average selection effect of Party workers, while the expected earning of other workers decreased, thus raising the reported Party earning differential at NSOS. In a word, by assuming selection effect solely represents varying

levels of unobservable characteristics, the unconditional differential in favor of CCP workers decreased from 1988 to 1995 and became negative in 1999 in both sectors.

Table 6.29 and Table 6.30 also show Party differentials disaggregated by age, gender and education level in both sectors. Figure 6.18 presents Party differentials by gender. The conditional earning differential in SOS shows that the male and female Party premiums slightly increased over time. On average, the females' Party premium was always greater than that for the males'. In the NSOS, the male and female Party premium fell during three years being studied, and female Party premium disappeared in 1999. For either females or males, on average, the conditional Party premium was higher in the NSOS than that in the SOS during 1988 and 1995, but it was reversed in 1999. It might because the SOS had more equalized wage payment system in the early reform era.

Further, the Party premium of young age cohort increased over time (See Figure 6.19). The old age cohort in SOS had bigger Party premium than the young age cohort in 1988 and 1995, but became reversed in 1999. In the NSOS, the old age cohort always had bigger Party premium than the young age cohort, while the Party premium in two age cohorts fell during three years. For either age cohort, their Party premium is higher in the NSOS than in the SOS in 1988 and 1995.

The Party premium for two age cohorts with college education is illustrated on Figure 6.20, while that with senior high school education or professional school education is shown on Figure 6.21. For those with the same education level, the predicted earning in the young age cohort is different from that in old age cohort in the SOS, but there is no consistent pattern over time.

Workers in either age cohort of NSOS with median education (only a senior high or professional school education) had Party premium during each year. The comparison between age-cohorts in NSOS shows that the old age cohort at this educational level is predicted to have a higher Party premium than does the comparable young age cohort. Meanwhile, only those CCP workers in the young age cohort with a college education in NSOS had the Party premium in 1988, while those with a college education in the old age cohort had the Party premium in 1988 and 1995. Both age cohorts did not have positive Party premium in 1999. This indicates that the Party card in NSOS is not associated with

higher predicted earnings to the young age cohort with a college degree in the recent economic era, while the Party premium for the comparable old age cohort disappeared later.

For either age cohort, their Party premium was higher in the NSOS during the early reform era, but became reversed in 1999. For the young age cohort with a college education, the Party premium in the NSOS was bigger than that in the SOS in 1988 only. They still had Party premium in the SOS in later years, but not in the NSOS. Meanwhile, for the old age cohort with a college education, the Party premium in the NSOS was higher than that in the SOS in 1988 and 1995. They still had Party premium in the SOS in 1999, but not in the NSOS. It indicates that the Party card does not play an important role in the returns to the young workers who have a college education in the NSOS in the 1990s, while it still works for the old workers in the early 1990s. For either age cohort with median education, the Party premium was bigger in the NSOS than that in the SOS in 1988 and 1995. The young age cohort with median education had much smaller Party premium in the NSOS than that in the SOS in 1999, while the Party premium was tied in two sectors for the old age cohort with median education in 1999. The findings imply that the Party card works for the young age cohort with median education in either sector during three years being studied. It fell and approached to minimum in the NSOS in 1999 but increased in the SOS over time.

Figure 6.22 shows that Party membership generates a larger earning premium in the SOS for less educated workers in the same age cohort. For example, the workers with only a senior high or professional school education have higher Party premiums than those with a college education. This implies that the Party card plays a more important role for those who had less education.

6.8 Conclusion

This chapter presents the Multinomial Logit – OLS two stage regression results for three specific years, and for the four groups of workers in the labor market in urban China. The chapter began with multinomial logit regression results, which provided the relative probability of workers being in one of four categories; and then selection

correction terms were adopted in an earning equation regression. The selection effect remained negative and significant with regard to the earning equation of NonCCP/SOS workers during the three years.

It was found that increased work experience, increased educational attainment, and being male are the statistically significant variables which pull workers from the NonCCP category in either sector, and move them to the CCP/SOS category. Comparing to SOS, the NSOS has a larger wage differential between females and males in three years. The evidence in the SOS further shows that the investments of human capital did play an increasingly important role in the earning structure for NonCCP workers in SOS throughout three stages of economic reforms, and that the impact increased more quickly and strongly over time than it did on CCP workers. The contribution of higher education to CCP workers' earnings was not as much as it is for other workers' in the SOS. The results at NSOS indicate that, over time, different returns brought about by different educational levels increased significantly to NonCCP workers in NSOS. It was observed that the total earning advantage of CCP workers at SOS increased dramatically during the early reform period from 1988 to 1995, and then leveled out in 1999. However, it decreased in NSOS from 1988 to 1999.

In addition, it was also found that (1) the proportion of earning gap in two sectors, which is explained by endowment differences is increasing over time, while the unexplained proportion is decreasing; (2) coefficient differentials favoring CCP workers went down from 1988 to 1995, and they become negative in favor of other workers in 1999. Such a pattern indicates that the economic reform in the SOS, and the privatization in the NSOS, made the earnings differential which is due to varying returns to observable characteristics of CCP workers and other workers disappear in the late 1990s. (3) In the early reform year, varying returns to observable characteristics favoring CCP workers explained the greatest portion of the total earning gap in both sectors, especially in the NSOS. However, due to further economic reforms in the SOS and the booming of NSOS, the contribution of coefficient differentials went down in both sectors in 1995. The continued reforms at SOS and privatization in NSOS minimized favorable returns to CCP members in 1999; (4) The contribution of higher education to CCP workers' earnings

was not as much as it is for other workers' in the SOS. The investments on human capital did play an increasingly important role in the earning structure of NonCCP workers in the SOS throughout three stages of the economic reforms, and it did so more quickly and strongly than it did for CCP workers in the SOS; (5) The results from the NSOS imply that different returns brought about because of different educational levels became more significant to NonCCP workers in the NSOS over time. The results also suggest that human capital and political capital were complements in the NSOS in 1988, whereas they became neither complements nor substitutes in the 1990s; (6) Given that we know that the individual has chosen in one of the alternatives, selectivity considerations act to increase the earning differential between CCP and NonCCP workers in the SOS due to the different returns to their attributes; (7) By assuming that the selection effect solely represents the varying returns to unobservable characteristics, an average worker would earn 11-12% more if s/he is a CCP worker in SOS as opposed to being a NonCCP worker during the three years examined, while the Party premium showed a decreasing trend at NSOS - from 20% in 1988 to 3% in 1999; (8) The females' Party premium in SOS was always greater than the males' during three years being studies; (9) For either females or males, the Party premium slightly rose over time in SOS, whereas both fell down in NSOS during three years; (10) in the SOS, the Party premium of young age cohort increased within three years. It was smaller than that of old age cohort in 1988 and 1995; (11) in the NSOS, the Party premium of either age cohort decreased and the old age cohort had bigger Party premium than the young age cohort within three years; (12) in the SOS, the Party card played a more important role to those who had less education when compared to workers with a higher education in the same age cohort, whereas the Party premium was higher for more educated workers in the NSOS in 1988 and became reversed later; (13) in the NSOS, the old age cohort with a high school education is predicted to have a higher Party premium than for the comparable young age cohort; (14) CCP workers with a college education in the young age cohort in the NSOS did not have Party premium during the radical economic reform era, while the part premium for the comparable old age cohort disappeared in late 1990s; (15) For either age cohort, NSOS had a higher Party premium than SOS did in 1988. This pattern continued for old age

cohort in 1995, but they were tied for the young age cohort in the same year. Then the Party premium became higher in SOS for both age cohorts in 1999; and (16) at different education level, the same pattern was found for both age cohorts in 1988. This pattern continued in 1995 except that the Party premium for the young age cohort with a college degree disappeared in 1995. In contrast, the Party premium became higher in SOS for either age cohort with different education level in 1999. Specifically, the Party premium for either age cohort with a college degree did not exist in 1999.

There is a paradox that the Party premium decreases in the NSOS and it almost remains constant in the SOS while the total number of members appears to have risen during economic transition. The findings in this paper indicate that the Party gives the people less incentive desire for membership on the financial side. However, we observe a remarkable increase in membership from having 3.8% of China's population in 1978 to 5.2% in 2002 when it reached 66.4 million strong (Song and Appleton, 2006). There are some speculative reasons behind this phenomenon. First, with a fear of less demand for membership, the Party modified the selection criteria in order to secure recruitment of members. For example, the Party might more proactively admit new members. For those who are observed and considered to have potential to meet the standards of the Party members, the Party might proactively approach them and encourage them to submit an application. The selection criteria might become not as strict as before. For example, in college, the grades usually become a dominant criterion to recruit new members. Second, the economic reforms also create the opportunities for the people to translate political power into higher incomes. There still exist potential monetary benefits, or so-called gray income for the people in prominent positions and the Party members are more likely to be promoted to these position in the SOS. Given the difficulties in fully measuring the degree of general corruption in terms of wages or earnings, this dissertation is not able to examine it. Third, the Party has not established an effective system to prevent grey income, it is likely because the government needs the CCP members' corporation.

Table 6.1 Marginal Effect in 1988

1988	(1) CCP/SOS	(2) NonCCP/SOS	(3) CCP/NSOS	(4) NonCCP/NSOS
experience	0.0098	-0.0075	0.0011	-0.0033
	(0.0002)***	(0.0004)***	(0.0001)***	(0.0003)***
male	0.157	-0.069	0.005	-0.092
	(0.006)***	(0.008)***	(0.002)***	(0.005)***
minority	0.007	-0.055	-0.008	0.056
	(0.015)	(0.020)***	(0.004)**	(0.017)***
fourcollege	0.350	-0.197	0.002	-0.155
	(0.021)***	(0.021)***	(0.005)	(0.005)***
twocollege	0.374	-0.251	0.008	-0.132
	(0.020)***	(0.020)***	(0.005)	(0.005)***
professional_school	0.193	-0.064	-0.005	-0.124
	(0.014)***	(0.015)***	(0.003)*	(0.006)***
senior_high	0.099	-0.039	0.005	-0.065
	(0.010)***	(0.010)***	(0.003)*	(0.005)***
industry	-0.059	-0.048	0.026	0.081
	(0.009)***	(0.014)***	(0.007)***	(0.011)***
construction	-0.047	-0.104	0.023	0.128
	(0.013)***	(0.026)***	(0.016)	(0.025)***
transportation	-0.012	0.015	0.024	-0.027
	(0.012)	(0.019)	(0.014)*	(0.013)**
commerce	-0.018	-0.105	0.038	0.085
	(0.011)	(0.019)***	(0.015)***	(0.015)***
real_estate	-0.037	-0.131	0.020	0.148
	(0.017)**	(0.030)***	(0.017)	(0.028)***
health	-0.008	0.003	0.031	-0.026
	(0.014)	(0.023)	(0.017)*	(0.016)

Table 6.1 (Continued) Marginal Effect Result in 1988

1988	(1) CCP/SOS	(2) NonCCP/SOS	(3) CCP/NSOS	(4) NonCCP/NSOS
arts	-0.015	0.119	-0.002	-0.102
	(0.012)	(0.016)***	(0.007)	(0.010)***
organization	0.309	-0.198	0.009	-0.120
	(0.022)***	(0.022)***	(0.010)	(0.009)***
LN	0.032	-0.159	0.011	0.116
	(0.017)*	(0.023)***	(0.008)	(0.022)***
JS	-0.052	-0.092	0.002	0.143
	(0.012)***	(0.022)***	(0.005)	(0.022)***
HN	0.015	-0.011	-0.005	0.001
	(0.015)	(0.020)	(0.004)	(0.015)
GS	0.025	-0.014	0.005	-0.015
	(0.018)	(0.022)	(0.007)	(0.016)
AH	-0.017	-0.097	0.010	0.104
	(0.014)	(0.022)***	(0.008)	(0.022)***
HB	0.022	-0.034	-0.001	0.013
	(0.016)	(0.020)*	(0.005)	(0.016)
GD	-0.039	-0.061	0.004	0.096
	(0.012)***	(0.021)***	(0.006)	(0.021)***
YN	0.026	0.027	-0.003	-0.050
	(0.016)	(0.019)	(0.005)	(0.012)***
SX	-0.011	0.011	-0.008	0.008
	(0.014)	(0.019)	(0.004)**	(0.016)
N	17320			
pseudo R^2	0.202			

Note: Marginal effect of 'years of experience' is calculated by Stata program 'margins'.

Table 6.2 Marginal Effects in 1995

1995	(1) CCP/SOS	(2) NonCCP/SOS	(3) CCP/NSOS	(4) NonCCP/NSOS
assigned	0.091	0.006	-0.005	-0.091
	(0.009)***	(0.011)	(0.003)	(0.009)***
experience	0.0108	-0.0078	0.0011	-0.0040
	(0.0004)***	(0.0005)***	(0.0002)***	(0.0004)***
male	0.123	-0.072	-0.002	-0.049
	(0.008)***	(0.009)***	(0.002)	(0.006)***
minority	-0.016	0.012	0.004	-0.000
	(0.018)	(0.022)	(0.007)	(0.015)
fourcollege	0.281	-0.176	-0.002	-0.103
	(0.024)***	(0.024)***	(0.005)	(0.006)***
twocollege	0.253	-0.158	0.004	-0.099
	(0.018)***	(0.018)***	(0.004)	(0.006)***
professional_school	0.137	-0.042	-0.002	-0.093
	(0.015)***	(0.016)***	(0.003)	(0.006)***
senior_high	0.076	-0.022	0.000	-0.053
	(0.013)***	(0.013)*	(0.003)	(0.005)***
industry	-0.069	-0.026	0.020	0.075
	(0.013)***	(0.019)	(0.008)**	(0.015)***
construction	-0.051	-0.013	-0.000	0.065
	(0.019)***	(0.032)	(0.011)	(0.029)**
transportation	-0.034	-0.002	0.027	0.009
	(0.017)*	(0.027)	(0.018)	(0.020)
commerce	-0.037	-0.079	0.024	0.092
	(0.014)***	(0.024)***	(0.014)*	(0.021)***
real_estate	-0.032	-0.106	0.046	0.092
	(0.020)	(0.034)***	(0.026)*	(0.028)***

Table 6.2 (Continued) Marginal Effects in 1995

1995	(1) CCP/SOS	(2) NonCCP/SOS	(3) CCP/NSOS	(4) NonCCP/NSOS
health	-0.016	0.038	-0.010	-0.012
	(0.019)	(0.025)	(0.006)	(0.020)
arts	-0.023	0.097	-0.014	-0.060
	(0.016)	(0.020)***	(0.004)***	(0.013)***
organization	0.168	-0.099	0.004	-0.073
	(0.022)***	(0.024)***	(0.009)	(0.011)***
LN	-0.064	0.007	-0.007	0.064
	(0.013)***	(0.023)	(0.005)	(0.022)***
JS	-0.071	-0.115	0.017	0.169
	(0.013)***	(0.028)***	(0.010)	(0.029)***
HN	-0.010	-0.028	0.020	0.018
	(0.017)	(0.024)	(0.012)*	(0.019)
GS	-0.008	-0.002	-0.002	0.012
	(0.020)	(0.027)	(0.008)	(0.022)
SC	-0.029	-0.032	0.010	0.052
	(0.015)*	(0.023)	(0.008)	(0.021)**
AH	-0.047	-0.092	0.012	0.128
	(0.016)***	(0.029)***	(0.010)	(0.029)***
GD	-0.018	-0.149	0.020	0.147
	(0.017)	(0.029)***	(0.012)*	(0.029)***
HB	-0.017	-0.005	0.006	0.017
	(0.016)	(0.023)	(0.008)	(0.019)
YN	-0.009	-0.021	0.005	0.025
	(0.017)	(0.024)	(0.008)	(0.020)
SX	-0.009	0.030	-0.001	-0.020
	(0.017)	(0.022)	(0.007)	(0.015)
N	10580			
pseudo R^2	0.193			

Note: Marginal effect of 'years of experience' is calculated by Stata program 'margins'.

Table 6.3 Marginal Effects in 1999

1999	(1) CCP/SOS	(2) NonCCP/SOS	(3) CCP/NSOS	(4) NonCCP/NSOS
assigned	0.088	0.000	-0.002	-0.086
	(0.015)***	(0.018)	(0.005)	(0.013)***
fmparty	0.055	-0.013	0.011	-0.052
	(0.015)***	(0.017)	(0.005)**	(0.010)***
fschooling	-0.002	-0.002	-0.000	0.004
	(0.002)	(0.003)	(0.001)	(0.002)**
mschooling	-0.006	0.009	-0.001	-0.003
	(0.003)**	(0.003)***	(0.001)	(0.002)
experience	0.0125	-0.0083	0.0015	-0.0057
	(0.0007)***	(0.0009)***	(0.0003)***	(0.0007)***
male	0.109	-0.085	0.007	-0.030
	(0.014)***	(0.016)***	(0.004)	(0.010)***
minority	-0.013	0.048	-0.013	-0.022
	(0.035)	(0.038)	(0.008)	(0.022)
fourcollege	0.467	-0.404	0.055	-0.118
	(0.034)***	(0.028)***	(0.020)***	(0.009)***
twocollege	0.376	-0.296	0.028	-0.108
	(0.027)***	(0.026)***	(0.010)***	(0.010)***
professional_school	0.265	-0.193	0.014	-0.086
	(0.032)***	(0.030)***	(0.010)	(0.010)***
senior_high	0.124	-0.070	0.006	-0.060
	(0.026)***	(0.025)***	(0.008)	(0.010)***
industry	-0.078	0.055	0.011	0.012
	(0.020)***	(0.023)**	(0.008)	(0.014)
construction	-0.059	0.111	0.005	-0.057
	(0.030)**	(0.035)***	(0.012)	(0.017)***

Table 6.3 (Continued) Marginal Effects in 1999

1999	(1) CCP/SOS	(2) NonCCP/SOS	(3) CCP/NSOS	(4) NonCCP/NSOS
transportation	0.071	0.010	-0.015	-0.066
	(0.030)**	(0.031)	(0.006)**	(0.013)***
commerce	-0.038	-0.077	0.038	0.077
	(0.029)	(0.034)**	(0.017)**	(0.022)***
real_estate	-0.037	0.098	-0.002	-0.059
	(0.029)	(0.032)***	(0.009)	(0.015)***
health	-0.034	0.115	-0.006	-0.076
	(0.030)	(0.033)***	(0.008)	(0.015)***
arts	-0.061	0.199	-0.031	-0.106
	(0.023)***	(0.026)***	(0.004)***	(0.012)***
organization	0.127	0.030	-0.017	-0.140
	(0.033)***	(0.034)	(0.006)***	(0.009)***
LN	-0.001	-0.082	0.033	0.051
	(0.024)	(0.029)***	(0.015)**	(0.020)**
JS	-0.022	0.044	-0.001	-0.021
	(0.023)	(0.026)*	(0.009)	(0.015)
HN	0.036	-0.004	0.010	-0.042
	(0.025)	(0.027)	(0.011)	(0.014)***
GS	0.012	0.006	0.016	-0.033
	(0.026)	(0.029)	(0.013)	(0.016)**
SC	0.020	-0.068	0.033	0.014
	(0.024)	(0.027)**	(0.014)**	(0.017)
N	4456			
pseudo R^2	0.183			

Note: Marginal effect of 'years of experience' is calculated by Stata program 'margins'.

Table 6.4 Earnings Equations in 1988

Year1988	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/ NSOS OLS	(8) NonCCP/ NSOS Two-Stage
Mill_ratio		0.054		0.060		0.028		-0.350
		(0.054)		(0.021)***		(0.332)		(0.212)*
experience	0.031	0.027	0.055	0.055	0.050	0.049	0.053	0.044
	(0.002)***	(0.005)***	(0.001)***	(0.001)***	(0.010)***	(0.017)***	(0.003)***	(0.007)***
experience2	-0.000	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
male	0.053	0.027	0.092	0.097	0.150	0.147	0.151	0.041
	(0.011)***	(0.028)	(0.007)***	(0.007)***	(0.041)***	(0.060)**	(0.016)***	(0.071)
minority	0.019	0.018	-0.006	0.001	0.060	0.068	0.025	0.084
	(0.022)	(0.024)	(0.019)	(0.017)	(0.142)	(0.144)	(0.039)	(0.046)*
fourcollege	0.203	0.167	0.283	0.293	0.271	0.270	0.274	-0.144
	(0.016)***	(0.039)***	(0.017)***	(0.017)***	(0.095)***	(0.098)***	(0.127)**	(0.263)
twocollege	0.151	0.113	0.190	0.198	0.234	0.229	0.234	-0.039
	(0.016)***	(0.042)***	(0.016)***	(0.016)***	(0.085)***	(0.100)**	(0.060)***	(0.172)
professional_ school	0.076	0.051	0.127	0.126	0.094	0.097	0.157	-0.074
	(0.014)***	(0.027)*	(0.012)***	(0.010)***	(0.079)	(0.079)	(0.043)***	(0.144)
senior_high	0.059	0.045	0.065	0.066	0.109	0.107	0.130	0.048
	(0.013)***	(0.020)**	(0.009)***	(0.009)***	(0.050)**	(0.074)	(0.019)***	(0.057)

Table 6.4 (Continued) Earning Equations in 1988

Year1988	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/ NSOS OLS	(8) NonCCP/ NSOS Two-Stage
industry	0.014	0.025	-0.027	-0.022	-0.246	-0.260	0.132	0.228
	(0.017)	(0.020)	(0.012)**	(0.012)*	(0.115)**	(0.270)	(0.033)***	(0.073)***
construction	0.063	0.071	-0.008	-0.001	-0.220	-0.229	0.157	0.282
	(0.030)**	(0.027)***	(0.022)	(0.021)	(0.149)	(0.273)	(0.047)***	(0.091)***
transportation	0.030	0.032	0.016	0.014	-0.423	-0.432	0.154	0.118
	(0.022)	(0.026)	(0.016)	(0.017)	(0.135)***	(0.261)*	(0.048)***	(0.064)*
commerce	-0.007	-0.004	-0.017	-0.008	-0.352	-0.366	0.168	0.262
	(0.020)	(0.021)	(0.014)	(0.015)	(0.119)***	(0.270)	(0.035)***	(0.074)***
real_estate	-0.004	0.004	-0.088	-0.077	-0.448	-0.457	0.082	0.225
	(0.038)	(0.052)	(0.025)***	(0.028)***	(0.165)***	(0.273)*	(0.049)*	(0.106)**
health	-0.004	-0.003	-0.028	-0.030	-0.241	-0.252	0.147	0.113
	(0.024)	(0.023)	(0.019)	(0.017)*	(0.145)*	(0.275)	(0.063)**	(0.060)*
arts	-0.024	-0.021	-0.039	-0.046	-0.267	-0.266	0.098	-0.089
	(0.020)	(0.019)	(0.016)**	(0.015)***	(0.167)	(0.291)	(0.082)	(0.133)
organization	-0.073	-0.102	-0.036	-0.017	-0.088	-0.092	0.091	-0.120
	(0.017)***	(0.033)***	(0.018)**	(0.019)	(0.154)	(0.266)	(0.088)	(0.162)

Table 6.4 (Continued) Earning Equations in 1988

Year1988	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/ NSOS OLS	(8) NonCCP/ NSOS Two-Stage
LN	-0.065	-0.071	-0.088	-0.072	0.056	0.051	0.003	0.123
	(0.024)***	(0.023)***	(0.019)***	(0.018)***	(0.104)	(0.108)	(0.047)	(0.081)
JS	-0.005	0.002	-0.020	-0.010	0.164	0.162	-0.004	0.133
	(0.024)	(0.024)	(0.018)	(0.017)	(0.106)	(0.096)*	(0.046)	(0.090)
HN	-0.195	-0.198	-0.271	-0.269	-0.058	-0.055	-0.348	-0.347
	(0.023)***	(0.023)***	(0.018)***	(0.018)***	(0.117)	(0.118)	(0.049)***	(0.044)***
GS	-0.010	-0.014	-0.118	-0.115	0.208	0.205	-0.309	-0.329
	(0.025)	(0.028)	(0.020)***	(0.021)***	(0.120)*	(0.152)	(0.056)***	(0.060)***
SX	-0.162	-0.161	-0.241	-0.241	-0.131	-0.125	-0.291	-0.285
	(0.024)***	(0.024)***	(0.018)***	(0.019)***	(0.126)	(0.148)	(0.050)***	(0.050)***
AH	-0.086	-0.084	-0.120	-0.110	-0.007	-0.012	-0.228	-0.124
	(0.025)***	(0.025)***	(0.019)***	(0.020)***	(0.107)	(0.115)	(0.047)***	(0.074)*
HB	-0.155	-0.159	-0.159	-0.155	-0.021	-0.020	-0.097	-0.082
	(0.023)***	(0.024)***	(0.018)***	(0.017)***	(0.112)	(0.093)	(0.049)**	(0.043)*
GD	0.285	0.291	0.229	0.236	0.602	0.599	0.290	0.388
	(0.024)***	(0.028)***	(0.018)***	(0.020)***	(0.108)***	(0.106)***	(0.047)***	(0.077)***

Table 6.4 (Continued) Earning Equations in 1988

Year1988	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/ NSOS OLS	(8) NonCCP/ NSOS Two-Stage
YN	-0.016	-0.021	-0.031	-0.033	0.227	0.229	-0.148	-0.222
	(0.024)	(0.023)	(0.018)*	(0.018)*	(0.116)*	(0.100)**	(0.053)***	(0.066)***
_cons	7.912	8.083	7.593	7.601	7.651	7.753	7.291	6.922
	(0.042)***	(0.176)***	(0.023)***	(0.025)***	(0.197)***	(1.143)***	(0.059)***	(0.224)***
N	3805	3805	9732	9732	333	333	3450	3450
R^2	0.294	0.294	0.390	0.390	0.445	0.445	0.317	0.318

Standard errors in parentheses
* p<.10, ** p<.05, *** p<.01

Table 6.5 Earnings Equations in 1995

Year 1995	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/SOS OLS	(4) NonCCP/SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/NSOS OLS	(8) NonCCP/NSOS Two-Stage
Mill_ratio		0.044		0.190		0.050		0.008
		(0.087)		(0.057)***		(0.516)		(0.088)
experience	0.045	0.042	0.064	0.067	0.068	0.067	0.065	0.065
	(0.005)***	(0.010)***	(0.003)***	(0.004)***	(0.016)***	(0.036)*	(0.006)***	(0.008)***
experience2	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.001)**	(0.000)***	(0.000)***
male	0.066	0.050	0.124	0.140	0.119	0.122	0.153	0.154
	(0.020)***	(0.044)	(0.014)***	(0.014)***	(0.066)*	(0.074)*	(0.029)***	(0.034)***
minority	0.011	0.014	-0.112	-0.116	-0.116	-0.121	-0.085	-0.085
	(0.046)	(0.039)	(0.034)***	(0.040)***	(0.155)	(0.164)	(0.076)	(0.080)
fourcollege	0.245	0.219	0.363	0.383	0.284	0.285	0.493	0.499
	(0.031)***	(0.064)***	(0.030)***	(0.028)***	(0.172)	(0.188)	(0.124)***	(0.149)***
twocollege	0.164	0.138	0.233	0.247	0.179	0.174	0.331	0.335
	(0.027)***	(0.061)**	(0.023)***	(0.022)***	(0.102)*	(0.118)	(0.065)***	(0.091)***
professional_school	0.086	0.070	0.209	0.198	0.253	0.255	0.248	0.253
	(0.027)***	(0.046)	(0.021)***	(0.022)***	(0.100)**	(0.091)***	(0.056)***	(0.079)***
senior_high	0.039	0.030	0.077	0.072	0.155	0.154	0.081	0.083
	(0.029)	(0.041)	(0.018)***	(0.019)***	(0.081)*	(0.090)*	(0.033)**	(0.040)**

Table 6.5 (Continued) Earning Equations in 1995

Year 1995	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/SOS OLS	(4) NonCCP/SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/NSOS OLS	(8) NonCCP/NSOS Two-Stage
industry	-0.123	-0.114	-0.084	-0.076	0.107	0.091	-0.206	-0.208
	(0.032)***	(0.036)***	(0.026)***	(0.029)***	(0.190)	(0.319)	(0.073)***	(0.084)**
construction	-0.080	-0.072	-0.082	-0.082	0.594	0.597	-0.043	-0.045
	(0.062)	(0.057)	(0.046)*	(0.045)*	(0.322)*	(0.469)	(0.105)	(0.100)
transportation	0.028	0.032	0.016	0.013	0.157	0.144	-0.134	-0.134
	(0.049)	(0.047)	(0.038)	(0.041)	(0.223)	(0.316)	(0.099)	(0.125)
commerce	-0.212	-0.206	-0.144	-0.123	0.213	0.199	-0.161	-0.164
	(0.039)***	(0.043)***	(0.030)***	(0.033)***	(0.203)	(0.323)	(0.076)**	(0.087)*
real_estate	-0.119	-0.114	-0.050	-0.026	-0.244	-0.266	-0.348	-0.350
	(0.058)**	(0.068)*	(0.043)	(0.043)	(0.224)	(0.389)	(0.090)***	(0.105)***
health	-0.101	-0.099	0.034	0.023	0.140	0.157	-0.088	-0.087
	(0.047)**	(0.041)**	(0.038)	(0.038)	(0.373)	(0.416)	(0.123)	(0.115)
arts	-0.106	-0.103	0.018	-0.002	0.501	0.533	-0.290	-0.288
	(0.039)***	(0.042)**	(0.034)	(0.031)	(0.376)	(0.464)	(0.138)**	(0.119)**
organization	-0.112	-0.127	-0.055	-0.017	0.153	0.153	-0.164	-0.161
	(0.032)***	(0.042)***	(0.033)*	(0.039)	(0.232)	(0.346)	(0.127)	(0.164)
LN	-0.376	-0.368	-0.373	-0.376	-0.622	-0.615	-0.392	-0.394
	(0.041)***	(0.047)***	(0.033)***	(0.032)***	(0.196)***	(0.198)***	(0.087)***	(0.093)***

Table 6.5 (Continued) Earning Equations in 1995

Year 1995	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/SOS OLS	(4) NonCCP/SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/NSOS OLS	(8) NonCCP/NSOS Two-Stage
JS	-0.096	-0.088	-0.124	-0.090	-0.413	-0.429	-0.140	-0.144
	(0.041)**	(0.044)**	(0.034)***	(0.036)**	(0.165)**	(0.251)*	(0.083)*	(0.092)
HN	-0.452	-0.451	-0.538	-0.529	-0.787	-0.804	-0.611	-0.612
	(0.041)***	(0.051)***	(0.035)***	(0.036)***	(0.173)***	(0.267)***	(0.092)***	(0.095)***
GS	-0.464	-0.464	-0.571	-0.572	-1.174	-1.176	-0.756	-0.755
	(0.046)***	(0.042)***	(0.039)***	(0.040)***	(0.254)***	(0.426)***	(0.108)***	(0.115)***
SX	-0.469	-0.467	-0.458	-0.468	-0.987	-0.988	-0.619	-0.618
	(0.041)***	(0.047)***	(0.033)***	(0.032)***	(0.202)***	(0.238)***	(0.096)***	(0.102)***
AH	-0.404	-0.400	-0.430	-0.400	-0.811	-0.822	-0.513	-0.516
	(0.045)***	(0.048)***	(0.037)***	(0.038)***	(0.186)***	(0.252)***	(0.087)***	(0.091)***
HB	-0.264	-0.263	-0.338	-0.338	-0.753	-0.761	-0.389	-0.389
	(0.039)***	(0.043)***	(0.033)***	(0.031)***	(0.180)***	(0.217)***	(0.093)***	(0.092)***
GD	0.365	0.367	0.194	0.236	0.028	0.010	0.454	0.450
	(0.041)***	(0.047)***	(0.036)***	(0.045)***	(0.172)	(0.281)	(0.084)***	(0.095)***
YN	-0.348	-0.348	-0.314	-0.307	-0.622	-0.628	-0.290	-0.290
	(0.039)***	(0.041)***	(0.034)***	(0.033)***	(0.186)***	(0.210)***	(0.096)***	(0.095)***
SC	-0.314	-0.311	-0.289	-0.280	-0.753	-0.764	-0.485	-0.487
	(0.039)***	(0.040)***	(0.033)***	(0.032)***	(0.170)***	(0.222)***	(0.087)***	(0.093)***

Table 6.5 (Continued) Earning Equations in 1995

Year 1995	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/SOS OLS	(4) NonCCP/SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/NSOS OLS	(8) NonCCP/NSOS Two-Stage
_cons	8.407	8.532	8.068	8.110	8.083	8.251	8.081	8.090
	(0.074)***	(0.272)***	(0.045)***	(0.053)***	(0.269)***	(1.854)***	(0.110)***	(0.151)***
N	2464	2464	6188	6188	217	217	1711	1711
R^2	0.317	0.317	0.278	0.280	0.513	0.513	0.353	0.353

Standard errors in parentheses
* p<.10, ** p<.05, *** p<.01

Table 6.6 Earnings Equations in 1999

Year 1999	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/N SOS OLS	(8) NonCCP/N SOS Two-Stage
Mill_ratio		-0.049		0.164		-0.087		0.036
		(0.129)		(0.071)**		(0.354)		(0.137)
experience	0.030	0.033	0.044	0.044	-0.009	-0.005	0.036	0.038
	(0.007)***	(0.011)***	(0.004)***	(0.005)***	(0.021)	(0.021)	(0.008)***	(0.012)***
experience2	-0.000	-0.001	-0.001	-0.001	0.000	0.000	-0.001	-0.001
	(0.000)***	(0.000)**	(0.000)***	(0.000)***	(0.000)	(0.000)	(0.000)***	(0.000)***
male	0.051	0.064	0.069	0.086	0.361	0.369	0.248	0.251
	(0.029)*	(0.043)	(0.021)***	(0.023)***	(0.085)***	(0.098)***	(0.044)***	(0.047)***
minority	0.133	0.132	-0.022	-0.037	0.051	0.020	0.178	0.181
	(0.069)*	(0.049)***	(0.051)	(0.060)	(0.307)	(0.214)	(0.114)	(0.141)
fourcollege	0.314	0.355	0.558	0.616	0.443	0.501	0.668	0.688
	(0.050)***	(0.128)***	(0.042)***	(0.048)***	(0.144)***	(0.269)*	(0.115)***	(0.138)***
twocollege	0.242	0.277	0.344	0.385	0.099	0.137	0.481	0.497
	(0.043)***	(0.105)***	(0.032)***	(0.037)***	(0.135)	(0.206)	(0.070)***	(0.091)***
professional_school	0.105	0.130	0.172	0.193	0.151	0.178	0.253	0.267
	(0.050)**	(0.084)	(0.034)***	(0.036)***	(0.140)	(0.165)	(0.072)***	(0.088)***
senior_high	0.007	0.019	0.111	0.116	-0.015	-0.005	0.207	0.216
	(0.049)	(0.062)	(0.028)***	(0.028)***	(0.135)	(0.136)	(0.053)***	(0.066)***

Table 6.6 (Continued) Earning Equations in 1999

Year 1999	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/N SOS OLS	(8) NonCCP/N SOS Two-Stage
industry	-0.159	-0.169	-0.144	-0.156	-0.281	-0.263	-0.008	-0.006
	(0.045)***	(0.054)***	(0.032)***	(0.034)***	(0.126)**	(0.140)*	(0.062)	(0.059)
construction	-0.027	-0.035	-0.005	-0.040	-0.223	-0.216	0.015	0.027
	(0.077)	(0.084)	(0.052)	(0.052)	(0.204)	(0.189)	(0.130)	(0.146)
transportation	0.194	0.203	0.149	0.137	-0.196	-0.222	0.277	0.291
	(0.049)***	(0.052)***	(0.041)***	(0.044)***	(0.231)	(0.307)	(0.098)***	(0.122)**
commerce	-0.023	-0.031	-0.102	-0.070	-0.269	-0.235	0.003	-0.006
	(0.067)	(0.067)	(0.046)**	(0.049)	(0.141)*	(0.202)	(0.065)	(0.072)
real_estate	0.270	0.266	0.313	0.281	0.559	0.556	0.512	0.524
	(0.065)***	(0.068)***	(0.046)***	(0.051)***	(0.200)***	(0.219)**	(0.118)***	(0.126)***
health	0.204	0.202	0.174	0.138	-0.214	-0.223	0.036	0.053
	(0.063)***	(0.052)***	(0.049)***	(0.042)***	(0.200)	(0.310)	(0.149)	(0.141)
arts	0.121	0.117	0.087	0.030	-0.578	-0.665	0.000	0.025
	(0.053)**	(0.052)**	(0.042)**	(0.044)	(0.511)	(0.443)	(0.160)	(0.182)
organization	0.153	0.166	0.114	0.096	-0.139	-0.170	0.245	0.284
	(0.045)***	(0.055)***	(0.044)***	(0.042)**	(0.219)	(0.263)	(0.250)	(0.248)
LN	-0.395	-0.396	-0.439	-0.417	-0.372	-0.342	-0.648	-0.653
	(0.048)***	(0.058)***	(0.037)***	(0.039)***	(0.169)**	(0.228)	(0.073)***	(0.080)***

Table 6.6 (Continued) Earning Equations in 1999

Year 1999	(1) CCP/SOS OLS	(2) CCP/SOS Two-Stage	(3) NonCCP/ SOS OLS	(4) NonCCP/ SOS Two-Stage	(5) CCP/NSOS OLS	(6) CCP/NSOS Two-Stage	(7) NonCCP/N SOS OLS	(8) NonCCP/N SOS Two-Stage
JS	-0.020	-0.022	-0.157	-0.165	-0.266	-0.265	-0.366	-0.362
	(0.047)	(0.055)	(0.035)***	(0.033)***	(0.200)	(0.186)	(0.079)***	(0.074)***
HN	-0.344	-0.339	-0.521	-0.520	-0.072	-0.066	-0.790	-0.784
	(0.044)***	(0.046)***	(0.034)***	(0.035)***	(0.178)	(0.216)	(0.082)***	(0.112)***
GS	-0.439	-0.437	-0.480	-0.480	-0.389	-0.372	-0.696	-0.690
	(0.049)***	(0.053)***	(0.037)***	(0.036)***	(0.192)**	(0.206)*	(0.086)***	(0.088)***
SC	-0.277	-0.277	-0.403	-0.382	-0.351	-0.322	-0.592	-0.595
	(0.043)***	(0.049)***	(0.035)***	(0.036)***	(0.157)**	(0.226)	(0.073)***	(0.079)***
_cons	8.685	8.549	8.414	8.482	8.984	8.693	8.455	8.468
	(0.098)***	(0.365)***	(0.054)***	(0.067)***	(0.315)***	(1.221)***	(0.094)***	(0.104)***
N	1210	1210	2321	2321	154	154	771	771
R^2	0.266	0.266	0.313	0.314	0.413	0.413	0.299	0.299

Standard errors in parentheses
* p<.10, ** p<.05, *** p<.01

Table 6.7 Average Returns to One Additional Year of Work Experience Given 15 Years of Experience

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	0.3	0.6	0.6	0.5
1995	0.5	0.7	0.7	0.7
1999	0.4	0.5	0.0	0.4

Note: It is assumed that intercept term and all other Xs are zero.

Table 6.8 Coefficients of the Variable 'Male' in Earnings Equations

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	0.027	0.097	0.147	0.041
	(0.030)	(0.007)***	(0.058)**	(0.065)
1995	0.050	0.140	0.122	0.154
	(0.037)	(0.015)***	(0.069)*	(0.035)***
1999	0.064	0.086	0.369	0.251
	(0.041)	(0.022)***	(0.092)***	(0.046)***

Note: Bootstrap standard errors are in the parenthesis; *p<.10, **p<.05, ***p<.01

Table 6.9 Inference Test – Gender Effects over Time

CCP/NSOS	1988-1995	1995-1999	1988-1999
CCP/SOS	-	-	-
NonCCP/SOS	***	**	-
CCP/NSOS	-	**	**
NonCCP/NSOS	*	**	***

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.10 Inference Test – Gender Effects across Cateogries

Male	1988	1995	1999
CCP/SOS v.s. NonCCP/SOS	***	**	-
CCP/NSOS v.s. NonCCP/NSOS	-	-	-
CCP/SOS v.s. CCP/NSOS	**	-	***
NonCCP/SOS v.s. NonCCP/NSOS	-	-	***

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.11 Coefficients of Education Level Dummies

Panel a. Coefficient of the Variable 'Four-year College Education'

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	0.167	0.293	0.270	-0.144
	(0.041)***	(0.017)***	(0.097)***	(0.272)
1995	0.219	0.383	0.285	0.499
	(0.059)***	(0.031)***	(0.173)	(0.143)***
1999	0.355	0.616	0.501	0.688
	(0.106)***	(0.050)***	(0.276)*	(0.135)***

Panel b. Coefficient of the Variable 'Two-year College Education'

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	0.113	0.198	0.229	-0.039
	(0.044)***	(0.016)***	(0.112)**	(0.168)
1995	0.138	0.247	0.174	0.335
	(0.055)**	(0.023)***	(0.112)	(0.086)***
1999	0.277	0.385	0.137	0.497
	(0.090)***	(0.037)***	(0.207)	(0.091)***

Panel c. Coefficient of the Variable 'Professional School Education'

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	0.051	0.126	0.097	-0.074
	(0.029)*	(0.012)***	(0.089)	(0.140)
1995	0.070	0.198	0.255	0.253
	(0.041)*	(0.021)***	(0.102)**	(0.077)***
1999	0.130	0.193	0.178	0.267
	(0.077)*	(0.035)***	(0.178)	(0.087)***

Panel d. Coefficient of the Variable 'Senior High School Education'

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	0.045	0.066	0.107	0.048
	(0.020)**	(0.009)***	(0.060)*	(0.051)
1995	0.030	0.072	0.154	0.083
	(0.033)	(0.018)***	(0.082)*	(0.041)**
1999	0.019	0.116	-0.005	0.216
	(0.056)	(0.028)***	(0.142)	(0.063)***

Note: Bootstrap standard errors are in the parenthesis; *p<.10, **p<.05, ***p<.01

Table 6.12 Inference Test – CCP/SOS v.s. NonCCP/SOS

CCP/SOS v.s. NonCCP/SOS	1988	1995	1999
Four-year College	***	***	**
Two-year College	**	**	-
Professional School	***	***	-
Senior High	-	-	*

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.13 Inference Test over Time – CCP/SOS Category

CCP/SOS	1988-1995	1995-1999	1988-1999
Four-year College	-	-	*
Two-year College	-	-	*
Professional School	-	-	-
Senior High	-	-	-

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.14 Inference Test over Time – NonCCP/SOS Category

NonCCP/SOS	1988-1995	1995-1999	1988-1999
Four-year College	***	***	***
Two-year College	**	***	***
Professional School	***	-	**
Senior High	-	*	**

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.15 Inference Test over Time – CCP/NSOS Category

CCP/NSOS	1988-1995	1995-1999	1988-1999
Four-year College	-	-	-
Two-year College	-	-	-
Professional School	*	-	-
Senior High	-	-	-

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.16 Inference Test over Time – NonCCP/NSOS Category

NonCCP/NSOS	1988-1995	1995-1999	1988-1999
Four-year College	**	-	***
Two-year College	**	-	***
Professional School	**	-	**
Senior High	-	**	**

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.17 Inference Test – CCP/NSOS v.s. NonCCP/NSOS

CCP/NSOS v.s. NonCCP/NSOS	1988	1995	1999
Four-year College	*	-	-
Two-year College	*	-	*
Professional School	-	-	-
Senior High	-	-	*

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.18 Inference Test – CCP/SOS v.s. CCP/NSOS

CCP/SOS v.s. NonCCP/SOS	1988	1995	1999
Four-year College	-	-	-
Two-year College	-	-	-
Professional School	-	**	-
Senior High	-	-	-

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.19 Inference Test – NonCCP/SOS v.s. NonCCP/NSOS

CCP/NSOS v.s. NonCCP/NSOS	1988	1995	1999
Four-year College	**	-	-
Two-year College	*	-	-
Professional School	*	-	-
Senior High	-	-	*

Note: '-'means differences of coefficients are not statistically significant at any conventional level; '*' means p<.10, '**' means p<.05, and '***' means p<.01

Table 6.20 Decomposition of CCP-NonCCP Earnings Differential in SOS

Panel a. 1998 CHIP sample (Without instrument in Two-stage estimation)

	OLS	Two-stage net of selection effects	Two-stage with selection effects	Proportion	OLS Proportion
Endowments differentials	a 0.1284 (0.0081)	c 0.0902 (0.039)	f 0.0902 (0.039)	f/(f+g+e) 36.48%	a/(a+b) 51.94%
Coefficients differentials	b 0.1188 (0.0092)	d 0.1699 (0.091)	g 0.1699 (0.091)	g/(f+g+e) 68.75%	b/(a+b) 48.06%
Selection-effect Differential			e -0.0129	e/(f+g+e) -5.23%	
Earning differential	a+b 0.2472	c+d 0.2601	f+g+e 0.2472		

Panel b. 1995 CHIP sample (With nature of recruitment as an instrument in Two-stage estimation)

	OLS	Two-stage net of selection effects	Two-stage with selection effects	Proportion	OLS Proportion
Endowments differentials	a 0.1978 (0.0140)	c 0.1723 (0.053)	f 0.1723 (0.053)	f/(f+g+e) 56.86%	a/(a+b) 65.30%
Coefficients differentials	b 0.1051 (0.0164)	d 0.0589 (0.144)	g 0.0589 (0.144)	g/(f+g+e) 19.43%	b/(a+b) 34.70%
Selection-effect Differential			e 0.0718	e/(f+g+e) 23.71%	
Earning differential	a+b 0.3030	c+d 0.2311	f+g+e 0.3030		

Table 6.20 (Continued) Decomposition of CCP-NonCCP Earnings Differential in SOS

Panel c. 1999 CHIP sample (With nature of recruitment and parental information as an instruments in Two-stage estimation)

	OLS	Two-stage net of selection effects	Two-stage with selection effects	Proportion	OLS Proportion
Endowments differentials	a 0.1709 (0.0182)	c 0.1953 (0.063)	f 0.1953 (0.063)	f/(f+g+e) 65.60%	a/(a+b) 57.40%
Coefficients differentials	b 0.1268 (0.0226)	d -0.0570 (0.182)	g -0.0570 (0.182)	g/(f+g+e) -19.15%	b/(a+b) 42.60%
Selection-effect Differential			e 0.1594	e/(f+g+e) 53.55%	
Earning differential	a+b 0.2977	c+d 0.1383	f+g+e 0.2977		

Panel d. Selection Effects in SOS

Selection Effects	CCP/SOS	NonCCP/SOS	Selection Effects Difference
1988	-0.0511	-0.0382	-0.0129
1995	-0.0435	-0.1153	0.0718
1999	0.0464	-0.1130	0.1594

Note: Weight =1 (Coefficients in CCP/SOS category as reference coefficients)

Table 6.21 Decomposition of CCP-NonCCP Earning Differential in SOS for Selected Characteristics

1988	Due to Endowments	Due to Coefficients	Endowments + Coefficients	Percentage of Endowment Differential out of Total Earning Differential	Percentage of Coefficient Differential out of Total Earning Differential	Percentage of Total Earning Differential
Experience	0.199	-0.585	-0.386	80.57%	-236.57%	-156.00%
Experience Squared	-0.107	0.270	0.163	-43.15%	109.23%	66.09%
Experience Total	0.093	-0.315	-0.222	37.43%	-127.33%	-89.91%
Four years' College	0.015	-0.007	0.008	6.04%	-2.63%	3.41%
Two years' College	0.009	-0.005	0.004	3.69%	-2.01%	1.67%
Professional School	0.003	-0.009	-0.006	1.10%	-3.57%	-2.47%
Senior high school	-0.004	-0.006	-0.009	-1.49%	-2.34%	-3.83%
Education Level Total	0.023	-0.026	-0.003	9.34%	-10.56%	-1.22%
Total Earning differential			0.2472			

Table 6.21 (Continued) Decomposition of CCP-NonCCP Earning Differential in SOS for Selected Characteristics

1995	Due to Endowments	Due to Coefficients	Endowments + Coefficients	Percentage of Endowment Differential out of Total Earning Differential	Percentage of Coefficient Differential out of Total Earning Differential	Percentage of Total Earning Differential
Experience	0.284	-0.454	-0.170	93.71%	-149.80%	-56.09%
Experience Squared	-0.182	0.221	0.039	-60.14%	73.03%	12.89%
Experience Total	0.102	-0.233	-0.131	33.57%	-76.77%	-43.20%
Four years' College	0.019	-0.011	0.007	6.15%	-3.70%	2.45%
Two years' College	0.018	-0.015	0.003	5.96%	-4.97%	0.98%
Professional School	0.001	-0.024	-0.023	0.40%	-7.85%	-7.45%
Senior high school	-0.003	-0.011	-0.014	-0.95%	-3.64%	-4.59%
Education Level Total	0.035	-0.061	-0.026	11.56%	-20.16%	-8.60%
Total Earning differential			0.3030			

Table 6.21 (Continued) Decomposition of CCP-NonCCP Earning Differential in SOS for Selected Characteristics

1999	Due to Endowments	Due to Coefficients	Endowments + Coefficients	Percentage of Endowment Differential out of Total Earning Differential	Percentage of Coefficient Differential out of Total Earning Differential	Percentage of Total Earning Differential
Experience	0.193	-0.194	-0.001	64.82%	-65.30%	-0.48%
Experience Squared	-0.123	0.045	-0.079	-41.44%	15.01%	-26.43%
Experience Total	0.070	-0.150	-0.080	23.38%	-50.29%	-26.91%
Four years' College	0.039	-0.023	0.016	13.06%	-7.85%	5.21%
Two years' College	0.041	-0.022	0.019	13.83%	-7.29%	6.54%
Professional School	0.000	-0.009	-0.009	-0.07%	-3.12%	-3.19%
Senior high school	-0.002	-0.028	-0.030	-0.73%	-9.26%	-9.99%
Education Level Total	0.078	-0.082	-0.004	26.10%	-27.52%	-1.42%
Total Earning differential			0.2977			

Table 6.22 Coefficient Differential for an Average Worker in NonCCP/SOS Category

Panel a. 1998 CHIP sample (Without instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.1699	0.0040	0.1740
	(0.0911)		(0.0555)

Panel b. 1995 CHIP sample (With nature of recruitment as an instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.0589	0.0885	0.1474
	(0.1440)		(0.0868)

Panel c. 1999 CHIP sample (With nature of recruitment and parental information as an instruments in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	-0.0570	0.1467	0.0897
	(0.1820)		(0.0928)

Table 6.23 Coefficient Differential for an Average Worker in CCP/SOS Category

Panel a. 1998 CHIP sample (Without instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.0613	0.0060	0.0674
	(0.0555)		(0.0072)

Panel b. 1995 CHIP sample (With nature of recruitment as an instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	-0.0247	0.1434	0.1187
	(0.1002)		(0.0204)

Panel c. 1999 CHIP sample (With nature of recruitment and parental information as an instruments in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	-0.1201	0.2019	0.0818
	(0.1329)		(0.0200)

Table 6.24 Decomposition of CCP-NonCCP Earnings Differential in NSOS

Panel a. 1988 CHIP sample (Without instrument in Two-Stage estimation)

	OLS	Two-stage net of selection effects	Two-stage with selection effects	Proportion	OLS Proportion
Endowments differentials	a 0.1922 (0.0332)	c 0.1857 (0.084)	f 0.1857 (0.084)	f/(f+g+e) 53.92%	a/(a+b) 55.82%
Coefficients differentials	b 0.1521 (0.0346)	d 0.6298 (0.852)	g 0.6298 (0.852)	g/(f+g+e) 182.91%	b/(a+b) 44.18%
Selection effects			e -0.4711	e/(f+g+e) -136.83%	
Earning differential	a+b 0.3443	c+d 0.8155	f+g+e 0.3443		

Panel b.1995 CHIP sample (With nature of recruitment as an instrument in Two-stage estimation)

	OLS	Two-stage net of selection effects	Two-stage with selection effects	Proportion	OLS Proportion
Endowments differentials	a 0.1613 (0.0514)	c 0.1519 (0.116)	f 0.1519 (0.116)	f/(f+g+e) 55.10%	a/(a+b) 58.51%
Coefficients differentials	b 0.1144 (0.0519)	d 0.2264 (1.220)	g 0.2264 (1.220)	g/(f+g+e) 82.11%	b/(a+b) 41.49%
Selection effects			e -0.1026	e/(f+g+e) -37.20%	
Earning differential	a+b 0.2757	c+d 0.3783	f+g+e 0.2757		

Table 6.24 (Continued) Decomposition of CCP-NonCCP Earnings Differential in NSOS

Panel c. 1999 CHIP smaple (with nature of recruitment and parental information as instruments in Two-stage estimation)

	OLS	Two-stage net of selection effects	Two-stage with selection effects	Proportion	OLS Proportion
Endowments differentials	a 0.1312 (0.0696)	c 0.1608 (0.133)	f 0.1608 (0.133)	f/(f+g+e) 64.73%	a/(a+b) 52.80%
Coefficients differentials	b 0.1173 (0.0752)	d -0.1318 (0.817)	g -0.1318 (0.817)	g/(f+g+e) -53.04%	b/(a+b) 47.20%
Selection effects			e 0.2194	e/(f+g+e) 88.30%	
Earning differential	a+b 0.2484	c+d 0.0291	f+g+e 0.2484		

Panel d. Selection Effects in NSOS

Selection Effects	CCP/NSOS	NonCCP/NSOS	Selection Effects Difference
1988	-0.0633	0.4079	-0.4711
1995	-0.1120	-0.0094	-0.1026
1999	0.1755	-0.0439	0.2194

Note: Weight =1 (Coefficients in CCP/NSOS category as reference coefficients)

Table 6.25 Decomposition of CCP-NonCCP Earning Differential in NSOS for Selected Characteristics

1988	(1) Due to Endowments	(2) Due to Coefficients	(3) Endowments + Coefficients	(4) Percentage of Endowment Differential out of Total Earning Differential	(5) Percentage of Coefficient Differential out of Total Earning Differential	(6) Percentage of Total Earning Differential
Experience	0.382	0.090	0.472	110.82%	26.16%	136.99%
Experience Squared	-0.259	0.004	-0.255	-75.24%	1.20%	-74.04%
Experience Total	0.123	0.094	0.217	35.58%	27.37%	62.95%
Four years' College	0.010	0.001	0.012	3.02%	0.42%	3.44%
Two years' College	0.010	0.004	0.015	3.02%	1.26%	4.28%
Professional School	0.003	0.006	0.009	0.86%	1.61%	2.47%
Senior high school	-0.003	0.015	0.011	-0.95%	4.22%	3.27%
Education Level Total	0.021	0.026	0.046	5.96%	7.51%	13.47%
Total Earning differential			0.3443			

Table 6.25 (Continued) Decomposition of CCP-NonCCP Earning Differential in NSOS for Selected Characteristics

1995	Due to Endowments	Due to Coefficients	Endowments + Coefficients	Percentage of Endowment Differential out of Total Earning Differential	Percentage of Coefficient Differential out of Total Earning Differential	Percentage of Total Earning Differential
Experience	0.464	0.019	0.483	168.25%	6.86%	175.11%
Experience Squared	-0.346	0.052	-0.295	-125.55%	18.70%	-106.85%
Experience Total	0.118	0.070	0.188	42.70%	25.56%	68.26%
Four years' College	0.008	-0.003	0.005	2.90%	-1.04%	1.86%
Two years' College	0.015	-0.009	0.006	5.36%	-3.12%	2.25%
Professional School	0.016	0.000	0.016	5.71%	0.06%	5.77%
Senior high school	-0.006	0.020	0.014	-2.02%	7.16%	5.14%
Education Level Total	0.033	0.008	0.041	11.95%	3.06%	15.01%
Total Earning differential			0.2757			

Table 6.25 (Continued) Decomposition of CCP-NonCCP Earning Differential in NSOS for Selected Characteristics

1999	Due to Endowments	Due to Coefficients	Endowments + Coefficients	Percentage of Endowment Differential out of Total Earning Differential	Percentage of Coefficient Differential out of Total Earning Differential	Percentage of Total Earning Differential
Experience	-0.034	-0.696	-0.730	-13.74%	-280.19%	-293.93%
Experience Squared	0.053	0.354	0.407	21.31%	142.47%	163.78%
Experience Total	0.019	-0.342	-0.323	7.57%	-137.73%	-130.16%
Four years' College	0.063	-0.008	0.055	25.41%	-3.22%	22.19%
Two years' College	0.023	-0.050	-0.028	9.10%	-20.31%	-11.21%
Professional School	0.004	-0.011	-0.007	1.50%	-4.38%	-2.88%
Senior high school	0.000	-0.061	-0.061	0.17%	-24.68%	-24.51%
Education Level Total	0.090	-0.131	-0.041	36.18%	-52.59%	-16.41%
Total Earning differential			0.2484			

Table 6.26 Coefficient Differential for an Average Worker in NonCCP/NSOS Category

Panel a. 1988 CHIP sample (Without instrument in Two-Stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.6298	-0.4405	0.1893
	(0.852)		(0.4320)

Panel b. 1995 CHIP sample (With nature of recruitment as an instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.2264	-0.0514	0.1750
	(1.220)		(0.6121)

Panel c. 1999 CHIP sample (With nature of recruitment and parental information as an instruments in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	-0.1318	0.1487	0.0170
	(0.817)		(0.3992)

Table 6.27 Coefficient Differential for an Average Worker in CCP/NSOS Category

Panel a. 1998 CHIP sample (Without instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.7534	-0.8557	-0.1023
	(0.806)		(0.1647)

Panel b. 1995 CHIP sample (With nature of recruitment as an instrument in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	0.2396	-0.0947	0.1450
	(1.125)		(0.0790)

Panel c. 1999 CHIP sample (With nature of recruitment and parental information as an instruments in Two-stage estimation)

	Two-stage without selectivity	Selectivity	Two-stage with selectivity
Coefficients	g	e2	g+e2
differentials	-0.2000	0.2490	0.0489
	(0.722)		(0.0832)

Table 6.28 OLS Regression on Log Earnings Equations without Constant Term

Year	(1)1988	(2) 1995	(3) 1999
experience	0.051	0.056	0.035
	(0.001)***	(0.002)***	(0.003)***
experience2	-0.001	-0.001	-0.001
	(0.000)***	(0.000)***	(0.000)***
male	0.105	0.118	0.113
	(0.006)***	(0.011)***	(0.016)***
minority	0.000	-0.083	0.049
	(0.014)	(0.026)***	(0.041)
fourcollege	0.242	0.368	0.569
	(0.012)***	(0.021)***	(0.030)***
twocollege	0.169	0.255	0.392
	(0.012)***	(0.016)***	(0.024)***
professional_school	0.113	0.212	0.224
	(0.009)***	(0.016)***	(0.026)***
senior_high	0.077	0.088	0.125
	(0.007)***	(0.014)***	(0.022)***
CCP_SOS	7.654	8.145	8.591
	(0.019)***	(0.033)***	(0.046)***
NonCCP_SOS	7.592	8.064	8.488
	(0.017)***	(0.029)***	(0.040)***
CCP_NSOS	7.604	7.978	8.419
	(0.026)***	(0.046)***	(0.060)***
NonCCP_NSOS	7.434	7.884	8.376
	(0.017)***	(0.030)***	(0.040)***
LN	-0.052	-0.379	-0.464
	(0.015)***	(0.025)***	(0.028)***
JS	-0.008	-0.134	-0.178
	(0.014)	(0.025)***	(0.027)***
HN	-0.265	-0.536	-0.512
	(0.014)***	(0.026)***	(0.026)***
GS	-0.114	-0.570	-0.496
	(0.016)***	(0.030)***	(0.029)***
SX	-0.233	-0.488	
	(0.015)***	(0.026)***	
AH	-0.142	-0.451	
	(0.015)***	(0.027)***	
HB	-0.149	-0.336	
	(0.015)***	(0.025)***	

Table 6.28 (Continued) OLS Regression on Earnings Equations without Constant Term

Year	(1)1988	(2) 1995	(3) 1999
GD	0.265	0.309	
	(0.014)***	(0.026)***	
YN	-0.038	-0.327	
	(0.015)**	(0.026)***	
SC		-0.336	-0.400
		(0.025)***	(0.026)***
Observations	17320	10580	4456
R-squared	0.9982	0.9963	0.9966

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6.29 Predicted Party Premium in SOS

Average Worker	OLS	1988 Two Stage Conditional	Two Stage Unconditional
Aggregate	0.11	0.11	0.15
By gender:			
Male	0.09	0.09	0.11
Female	0.13	0.13	0.20
By Age:			
29-38 Years old	0.08	0.08	0.13
49-58 Years old	0.11	0.12	0.10
By Age and Education level:			
who ages from 29 to 38 and get a college degree	0.05	0.05	0.06
who ages 29 to 38 and get a senior high school degree	0.09	0.08	0.14
Who ages from 49 to 58 and get a college degree	0.00	0.02	-0.03
who ages from 49 to 58 and get a senior high school degree	0.08	0.09	0.06

Table 6.29 (continued) Predicted Party Premium in SOS

Average Worker	OLS	1995 Two Stage Conditional	Two Stage Unconditional
Aggregate	0.11	0.11	0.05
By gender:			
Male	0.09	0.09	0.02
Female	0.13	0.13	0.10
By Age:			
29-38 Years old	0.08	0.08	0.04
49-58 Years old	0.13	0.14	0.01
By Age and Education level:			
who ages from 29 to 38 and get a college degree	0.03	0.03	-0.04
who ages 29 to 38 and get a senior high school degree	0.07	0.07	0.04
Who ages from 49 to 58 and get a college degree	0.06	0.11	-0.08
who ages from 49 to 58 and get a senior high school degree	0.10	0.11	-0.01

Table 6.29 (continued) Predicted Party Premium in SOS

Average Worker	OLS	1999 Two Stage Conditional	Two Stage Unconditional
Aggregate	0.12	0.12	-0.07
By gender:			
Male	0.10	0.11	-0.09
Female	0.14	0.14	-0.05
By Age:			
29-38 Years old	0.13	0.13	-0.06
49-58 Years old	0.09	0.09	-0.12
By Age and Education level:			
who ages from 29 to 38 and get a college degree	0.09	0.09	-0.10
who ages 29 to 38 and get a senior high school degree	0.12	0.13	-0.06
Who ages from 49 to 58 and get a college degree	0.01	0.06	-0.20
who ages from 49 to 58 and get a senior high school degree	0.07	0.08	-0.12

Table 6.30 Predicted Party Premium in NSOS

		1988	
		Two Stage	Two Stage
Average Worker	OLS	Conditional	Unconditional
Aggregate	0.20	0.19	0.84
By gender:			
Male	0.22	0.20	0.93
Female	0.18	0.18	0.73
By Age:			
29-38 Years old	0.16	0.17	0.77
49-58 Years old	0.29	0.25	1.04
By Age and Education level:			
who ages from 29 to 38 and get a college degree	0.21	0.22	1.15
who ages 29 to 38 and get a senior high school degree	0.15	0.16	0.82
Who ages from 49 to 58 and get a college degree	0.28	0.24	1.35
who ages from 49 to 58 and get a senior high school degree	0.25	0.20	1.07

Table 6.30 (Continued) Predicted Party Premium in NSOS

	1995		
Average Worker	OLS	Two Stage Conditional	Two Stage Unconditional
Aggregate	0.12	0.12	0.24
By gender:			
Male	0.11	0.11	0.22
Female	0.14	0.14	0.26
By Age:			
29-38 Years old	0.08	0.08	0.20
49-58 Years old	0.24	0.24	0.34
By Age and Education level:			
who ages from 29 to 38 and get a college degree	-0.08	-0.07	0.04
who ages 29 to 38 and get a senior high school degree	0.14	0.14	0.26
Who ages from 49 to 58 and get a college degree	0.13	0.12	0.23
who ages from 49 to 58 and get a senior high school degree	0.35	0.34	0.45

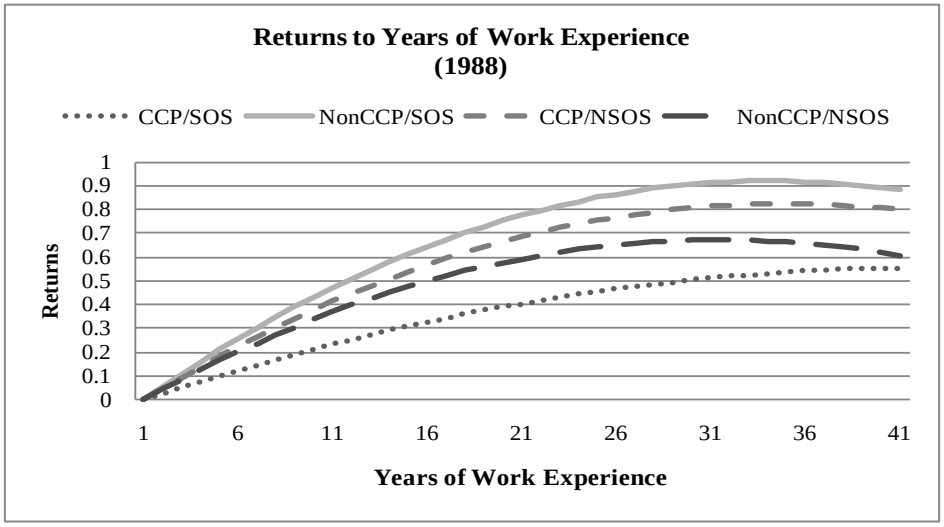
Table 6.30 (Continued) Predicted Party Premium in NSOS

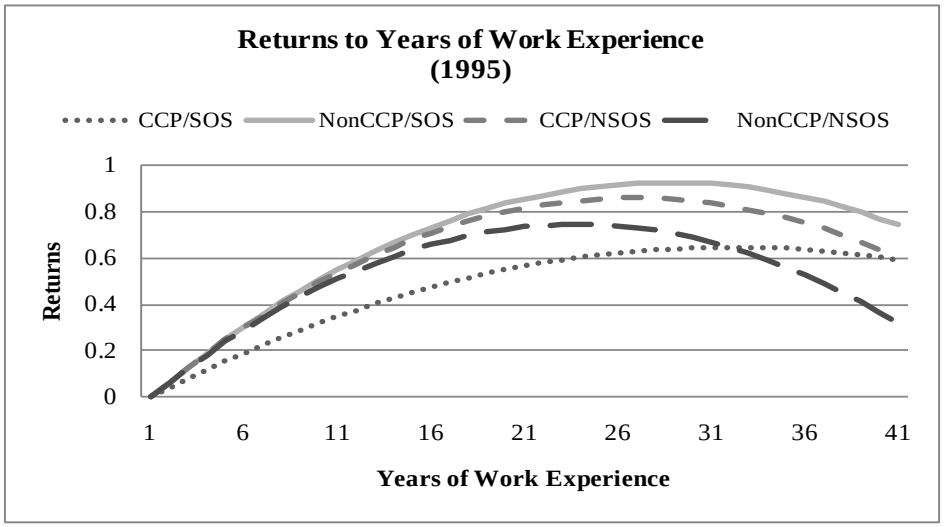
		1999	
Average Worker	OLS	Two Stage Conditional	Two Stage Unconditional
Aggregate	0.03	0.03	-0.24
By gender:			
Male	0.07	0.08	-0.19
Female	-0.03	-0.03	-0.30
By Age:			
29-38 Years old	0.00	0.01	-0.26
49-58 Years old	0.04	0.05	-0.23
By Age and Education level:			
who ages from 29 to 38 and get a college degree	-0.11	-0.11	-0.38
who ages 29 to 38 and get a senior high school degree	0.01	0.02	-0.25
Who ages from 49 to 58 and get a college degree	-0.18	-0.16	-0.44
who ages from 49 to 58 and get a senior high school degree	0.07	0.08	-0.20

Table 6.31 Selection Effects of an Average Worker

Year	CCP/SOS	NonCCP/SOS	CCP/NSOS	NonCCP/NSOS
1988	-0.09	-0.04	-0.07	0.57
1995	-0.07	-0.13	-0.13	-0.01
1999	0.07	-0.13	0.21	-0.06

Figure 6.1 Returns to Years of Work Experience in Three Years





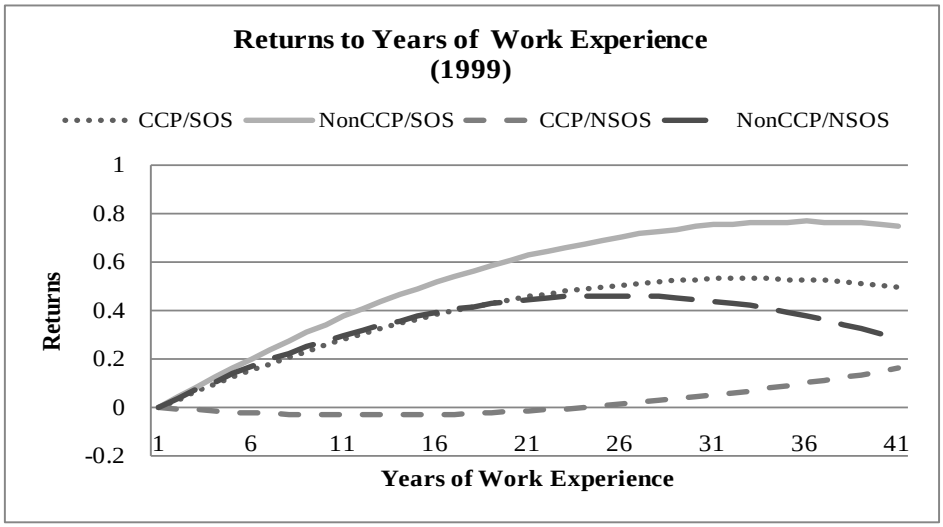
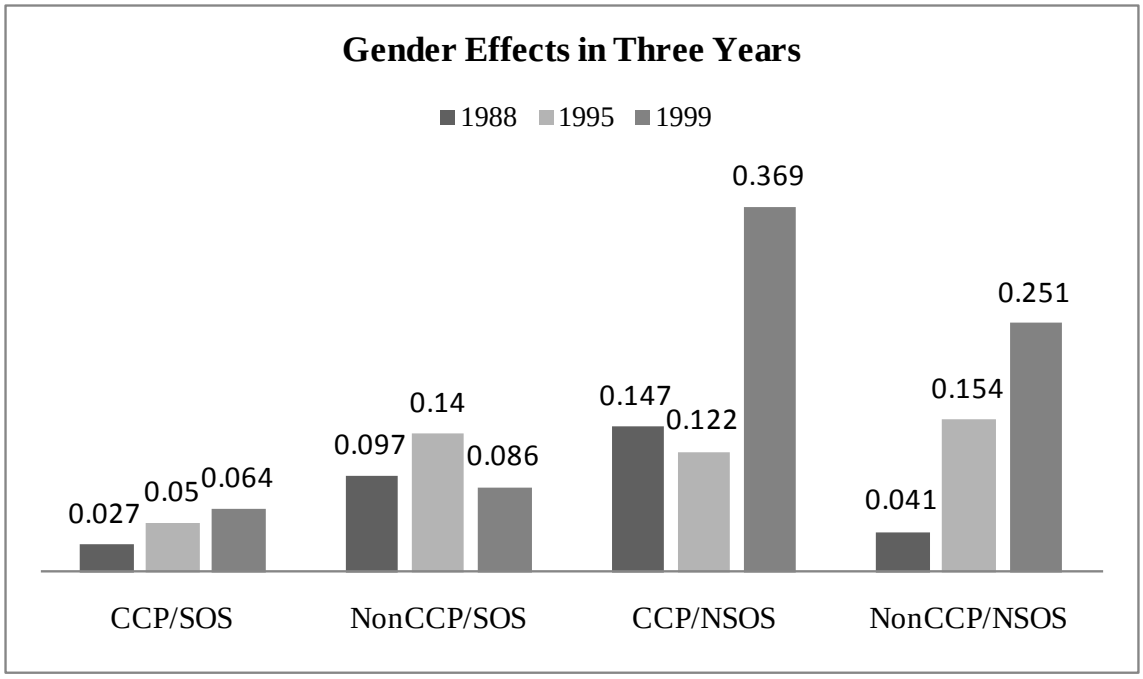


Figure 6.2 Gender Effects by Categories in Three Years



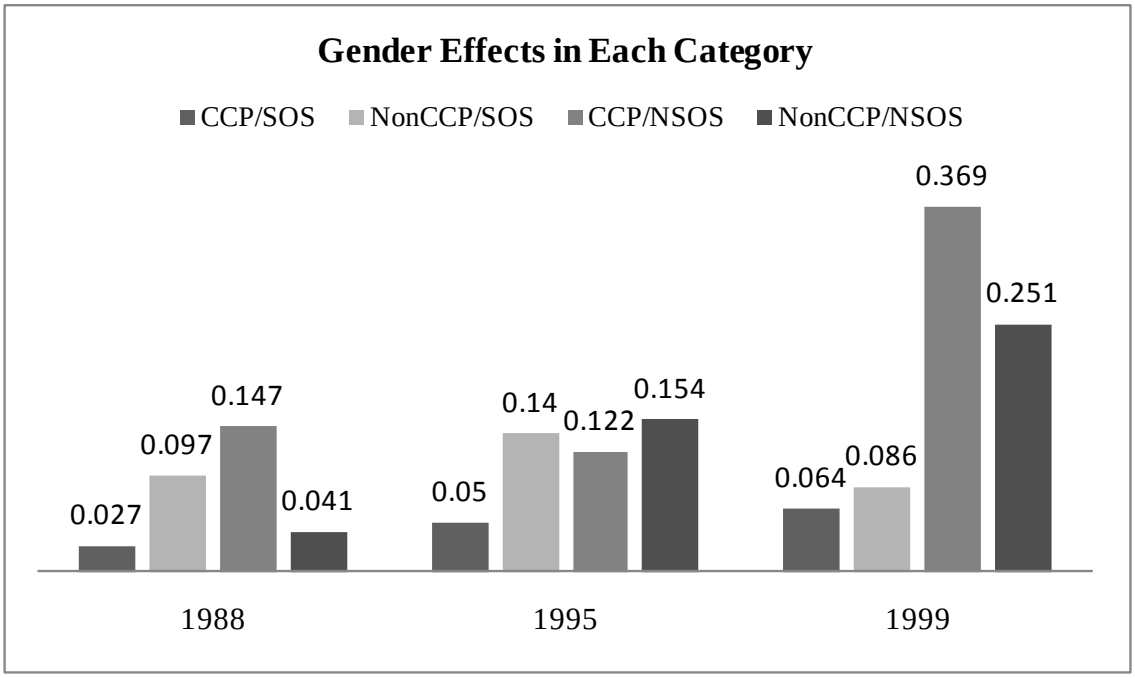
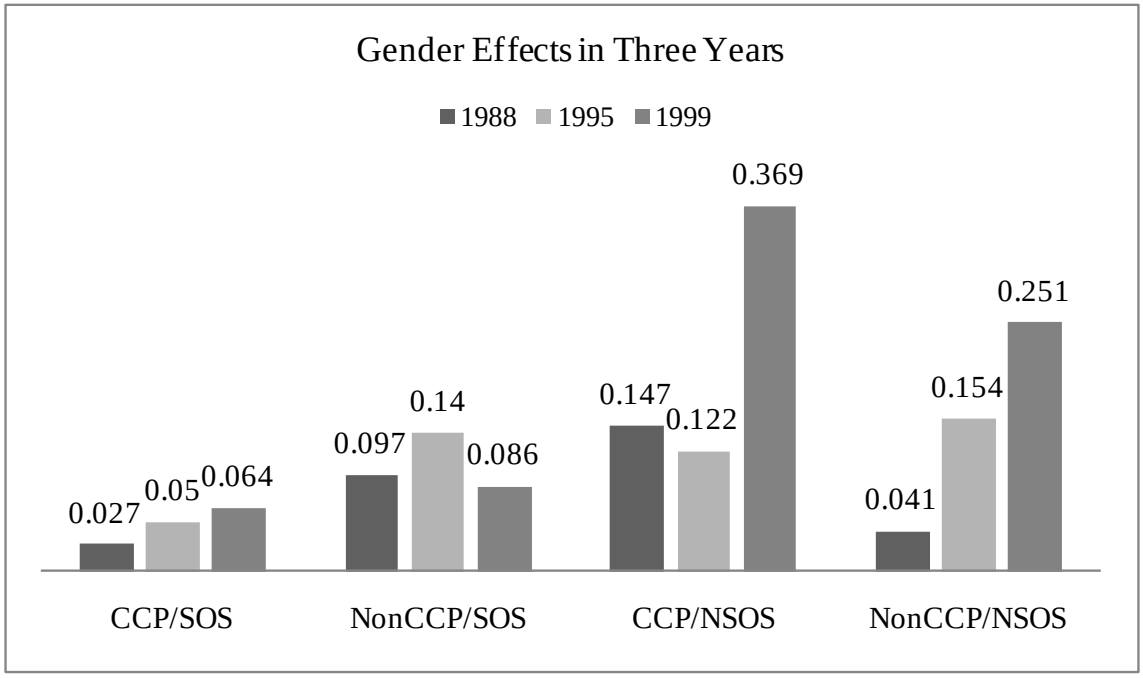


Figure 6.3 Comparison of Coefficient of Each Education Dummy between CCP/SOS and NonCCP/SOS



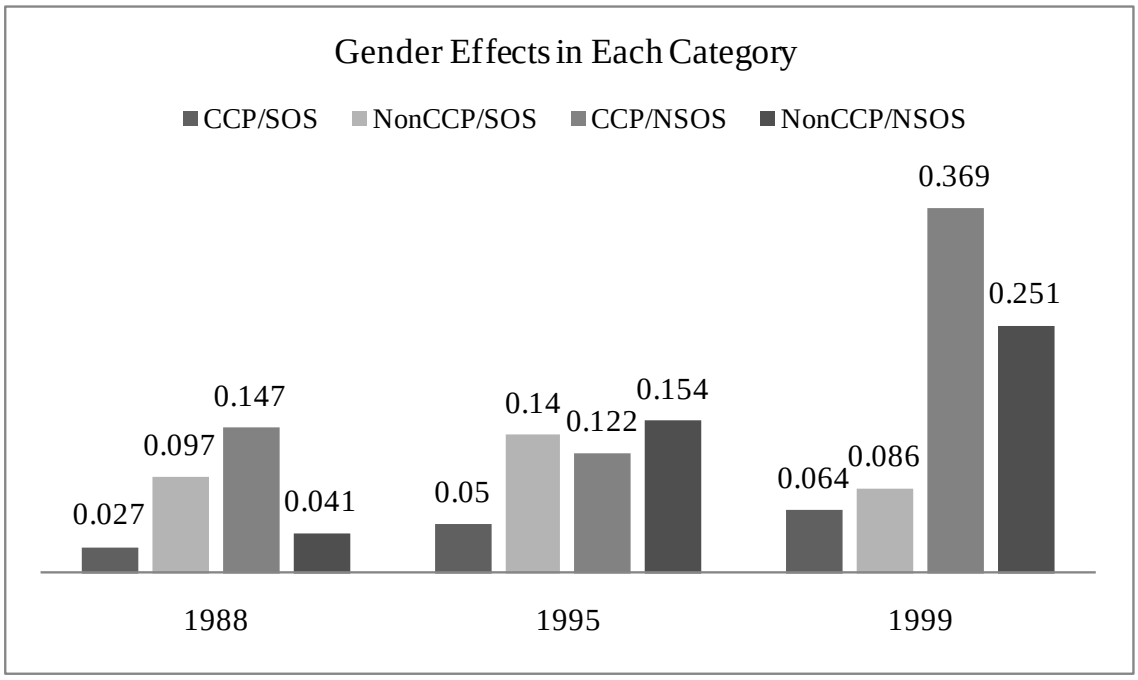
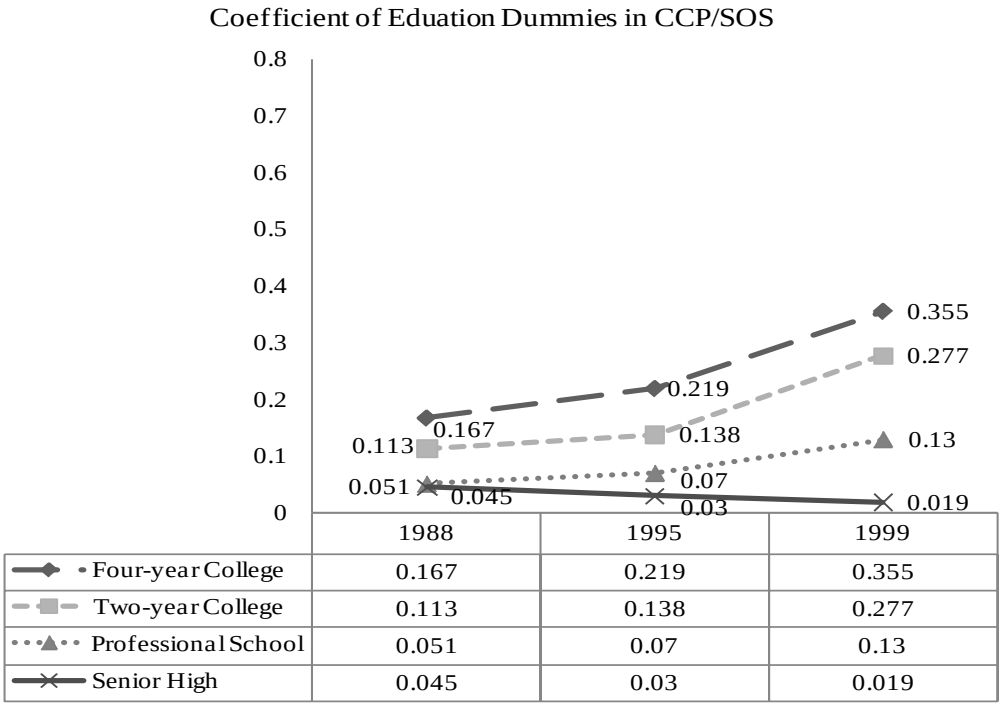
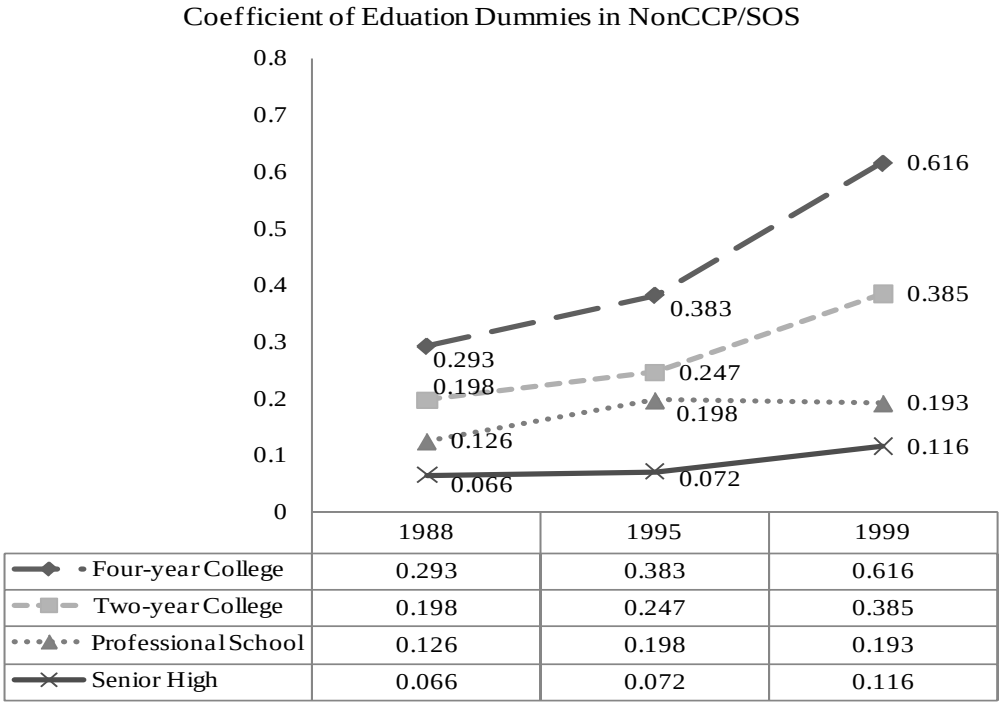


Figure 6.4 Comparison of Coefficients of Education Dummies Over Time in CCP/SOS and NonCCP/SOS

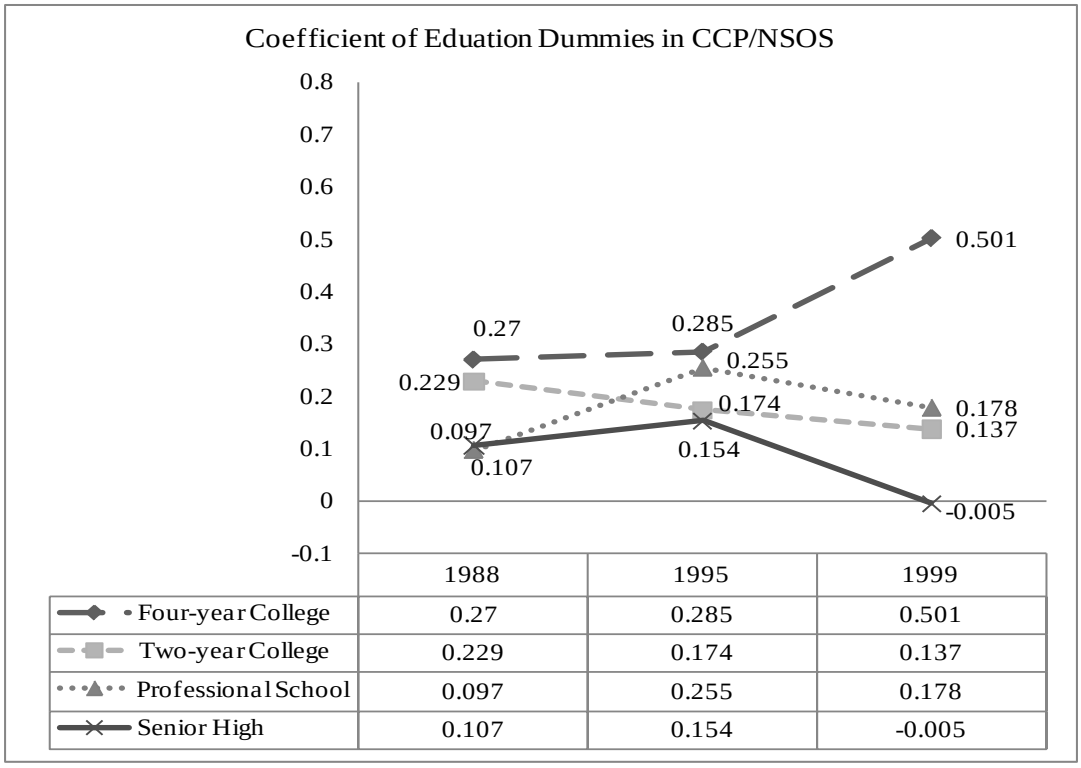


	1988	1995	1999
Four-year College	0.167	0.219	0.355
Two-year College	0.113	0.138	0.277
Professional School	0.051	0.07	0.13
Senior High	0.045	0.03	0.019

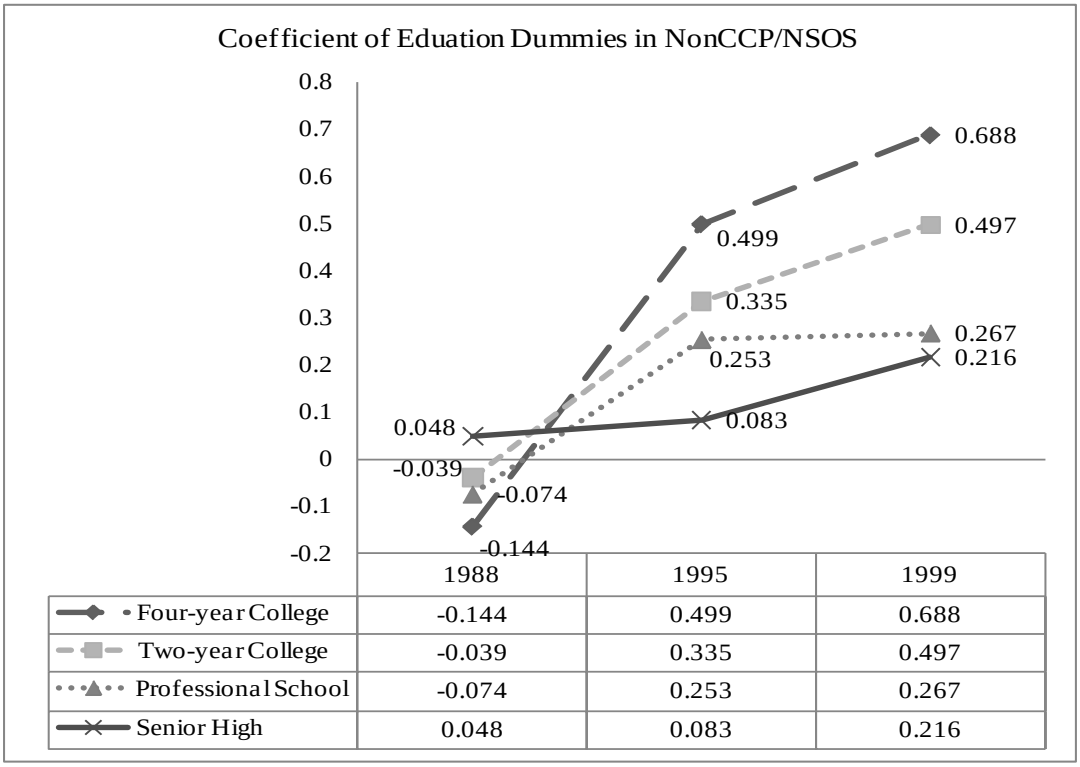


	1988	1995	1999
Four-year College	0.293	0.383	0.616
Two-year College	0.198	0.247	0.385
Professional School	0.126	0.198	0.193
Senior High	0.066	0.072	0.116

Figure 6.5 Comparison of Coefficients of Education Dummies Over Time in CCP/SOS and NonCCP/SOS

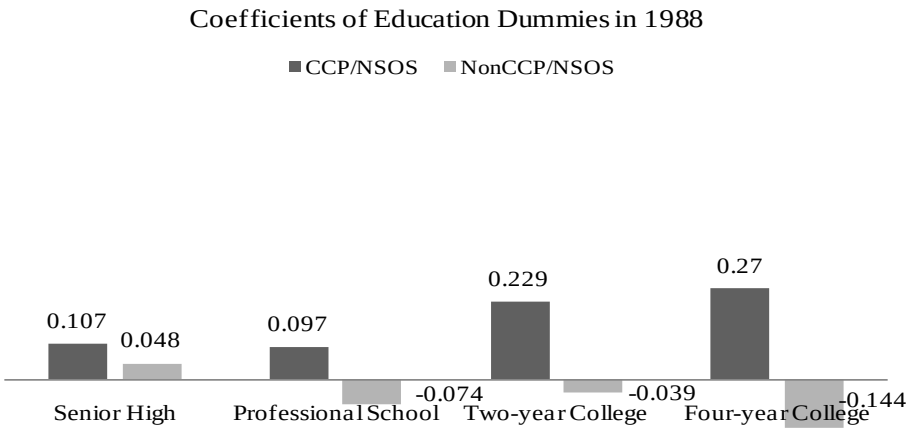


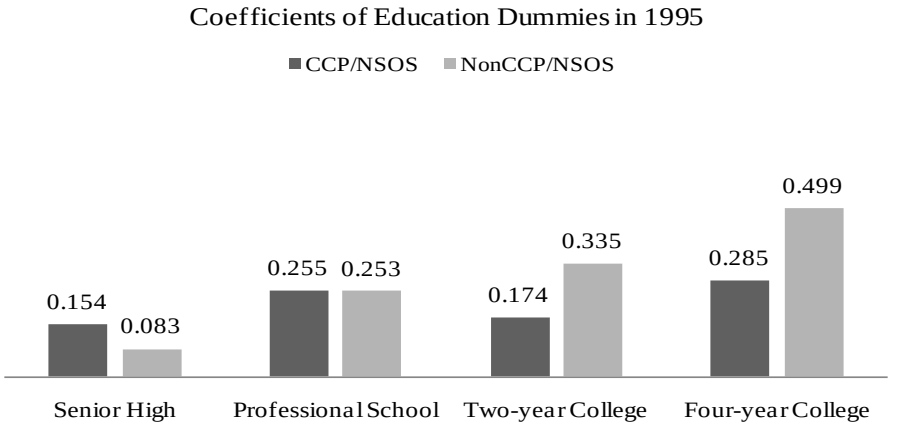
	1988	1995	1999
Four-year College	0.27	0.285	0.501
Two-year College	0.229	0.174	0.137
Professional School	0.097	0.255	0.178
Senior High	0.107	0.154	-0.005



	1988	1995	1999
Four-year College	-0.144	0.499	0.688
Two-year College	-0.039	0.335	0.497
Professional School	-0.074	0.253	0.267
Senior High	0.048	0.083	0.216

Figure 6.6 Comparison of Coefficient of Each Education Dummy between CCP/NSOS and NonCCP/NSOS





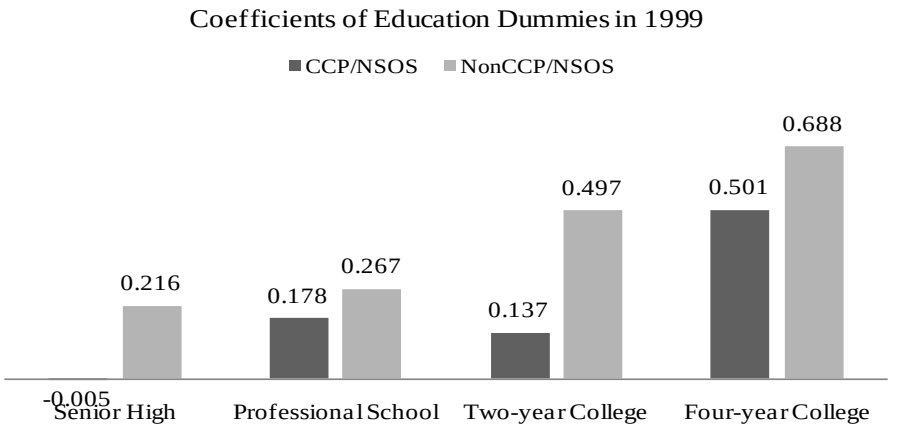


Figure 6.7 Comparison of Coefficient of Each Education Dummy between CCP/SOS and CCP/NSOS

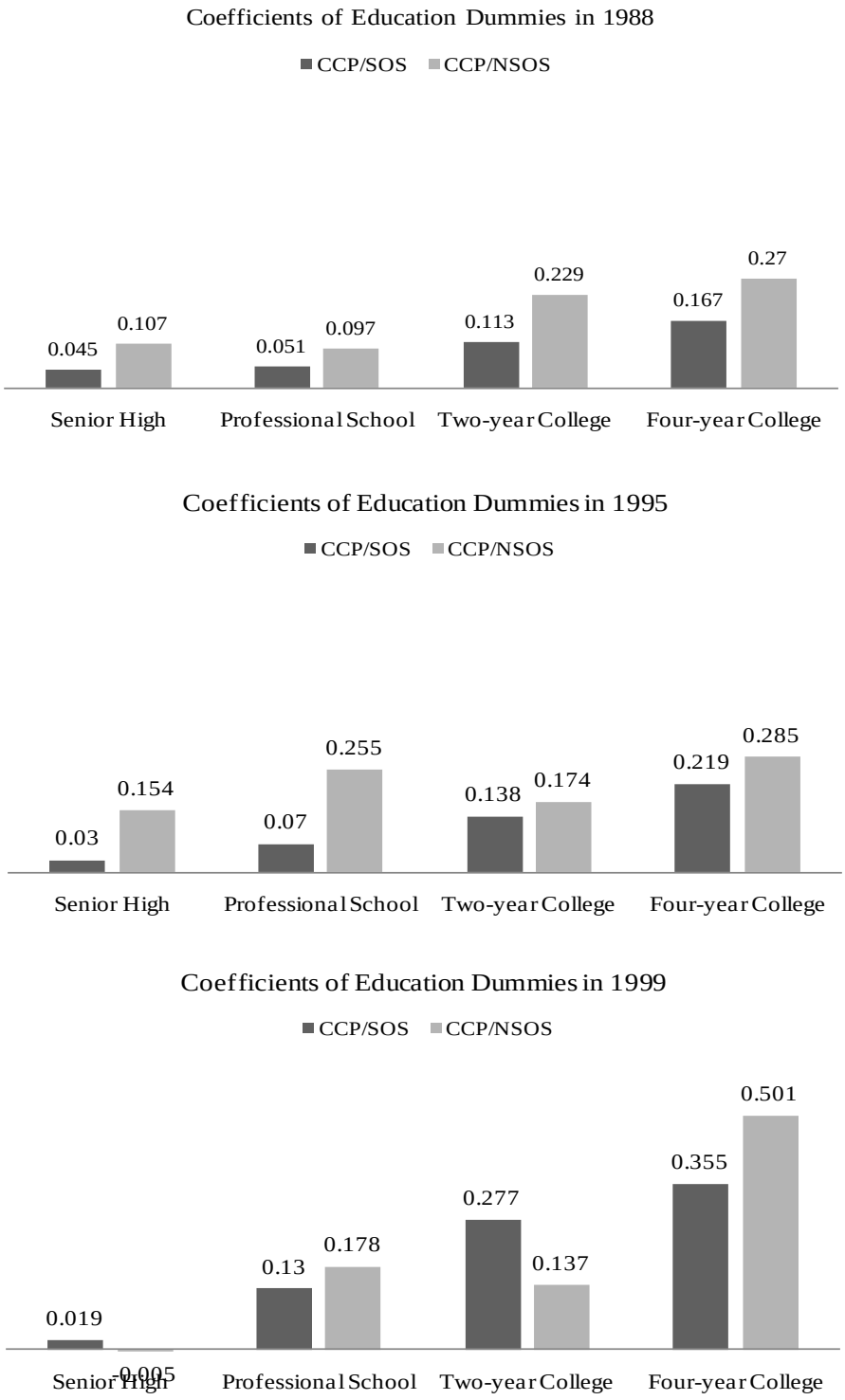


Figure 6.8 Comparison of Coefficient of Each Education Dummy between NonCCP/SOS and NonCCP/NSOS

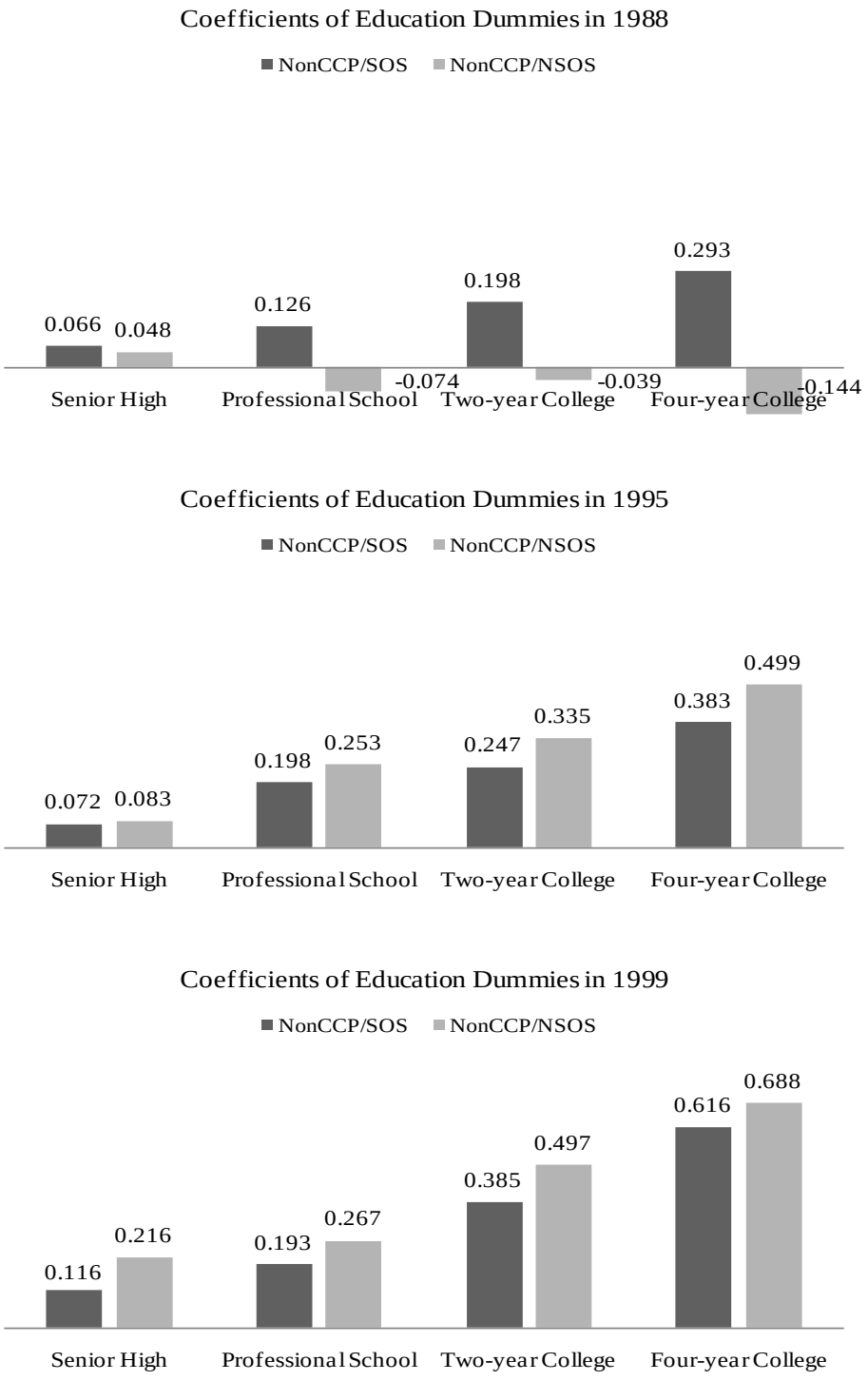
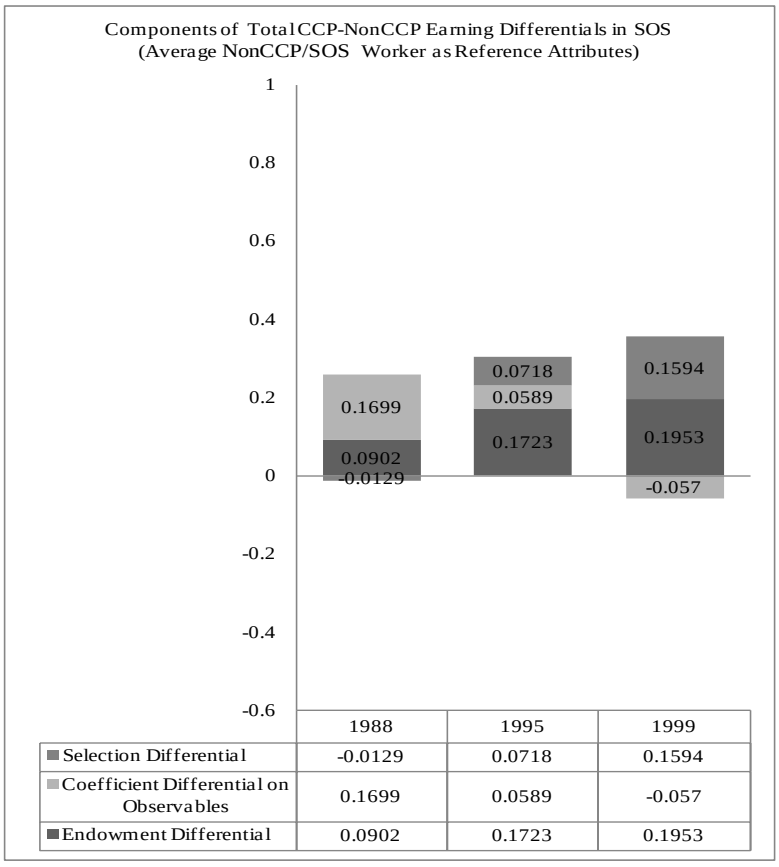
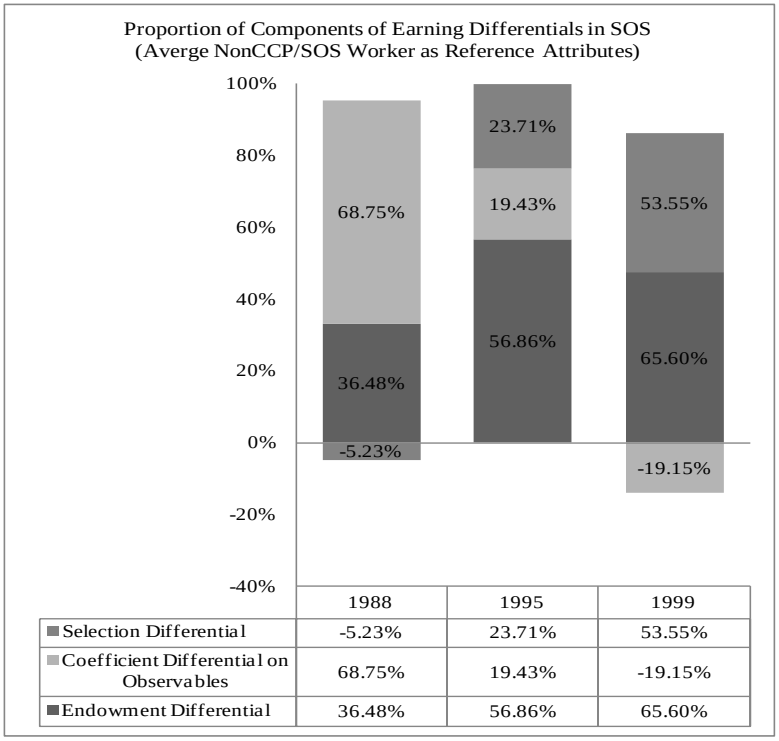


Figure 6.9 Components of Total CCP-NonCCP Earnings Differential in SOS

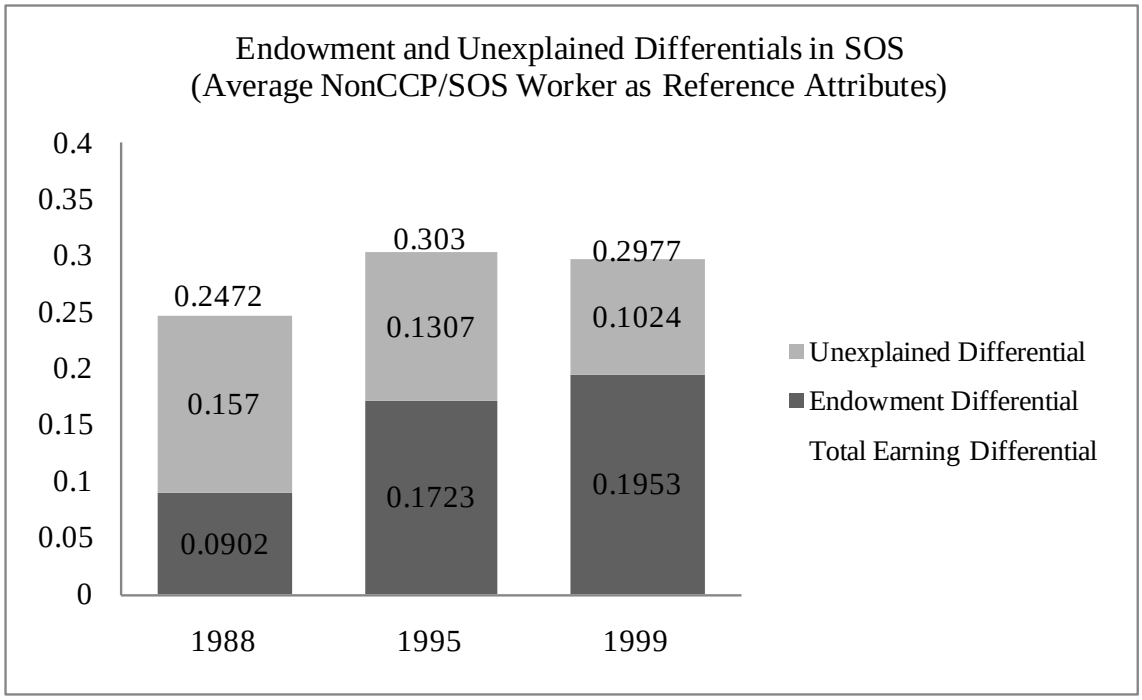


	1988	1995	1999
Selection Differential	-0.0129	0.0718	0.1594
Coefficient Differential on Observables	0.1699	0.0589	-0.057
Endowment Differential	0.0902	0.1723	0.1953



	1988	1995	1999
Selection Differential	-5.23%	23.71%	53.55%
Coefficient Differential on Observables	68.75%	19.43%	-19.15%
Endowment Differential	36.48%	56.86%	65.60%

Figure 6.10 Unexplained Differential v.s. Endowment Differential in SOS



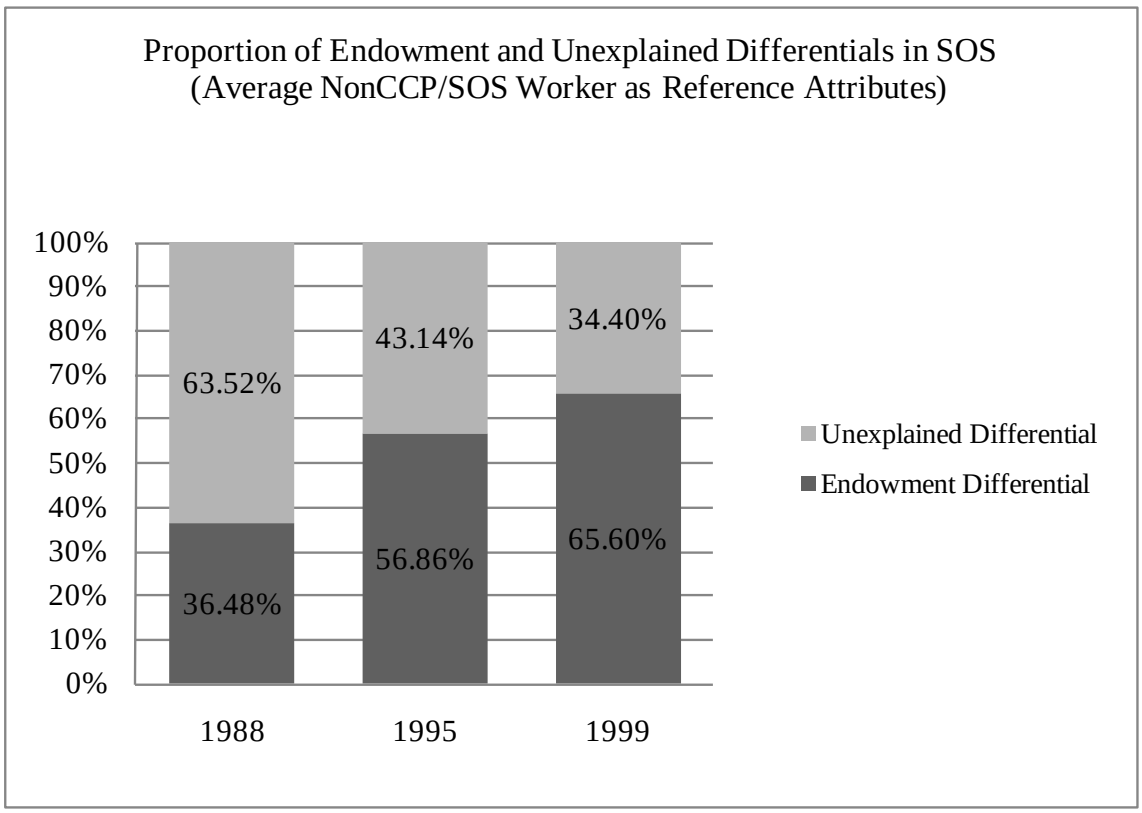
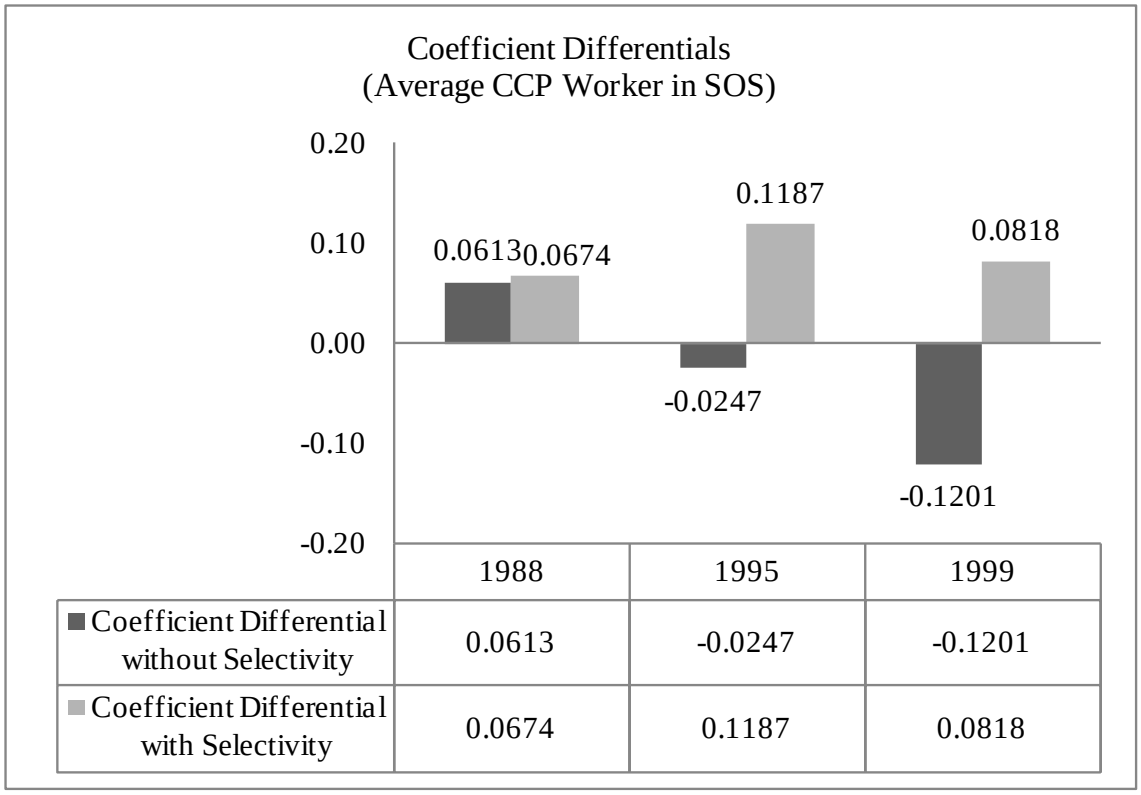


Figure 6.11 Two Types of Coefficient Differentials in SOS



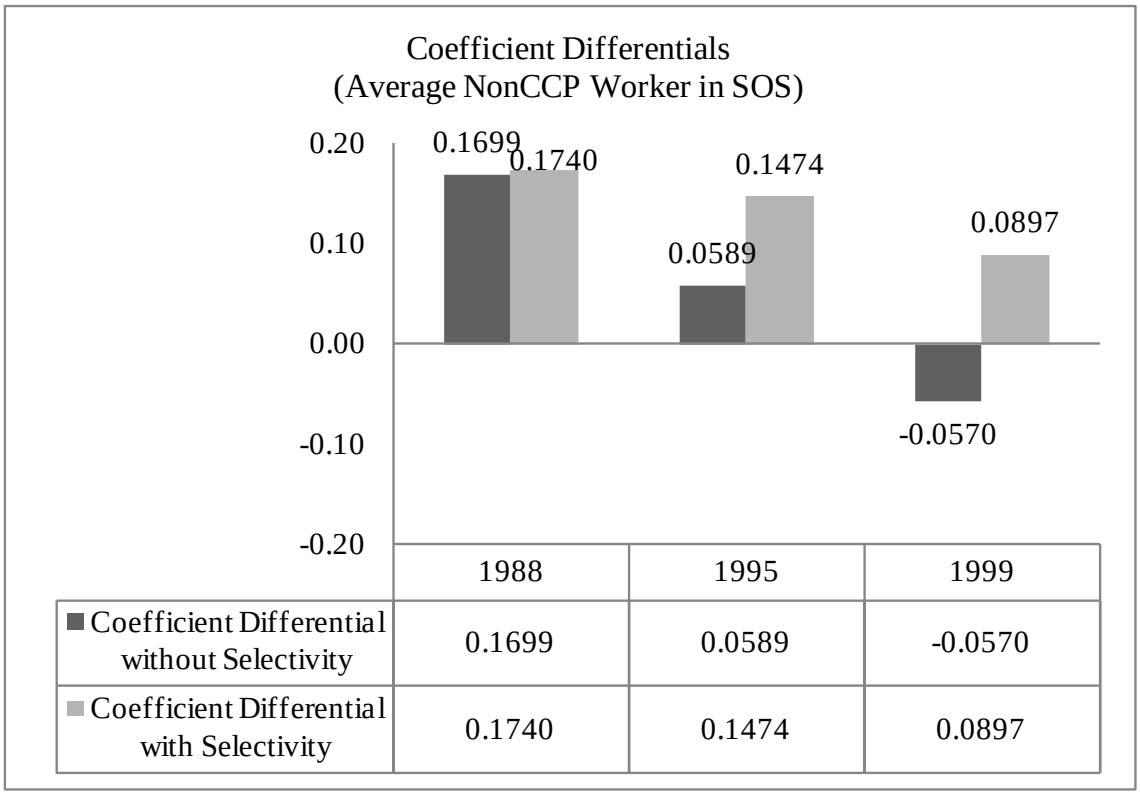
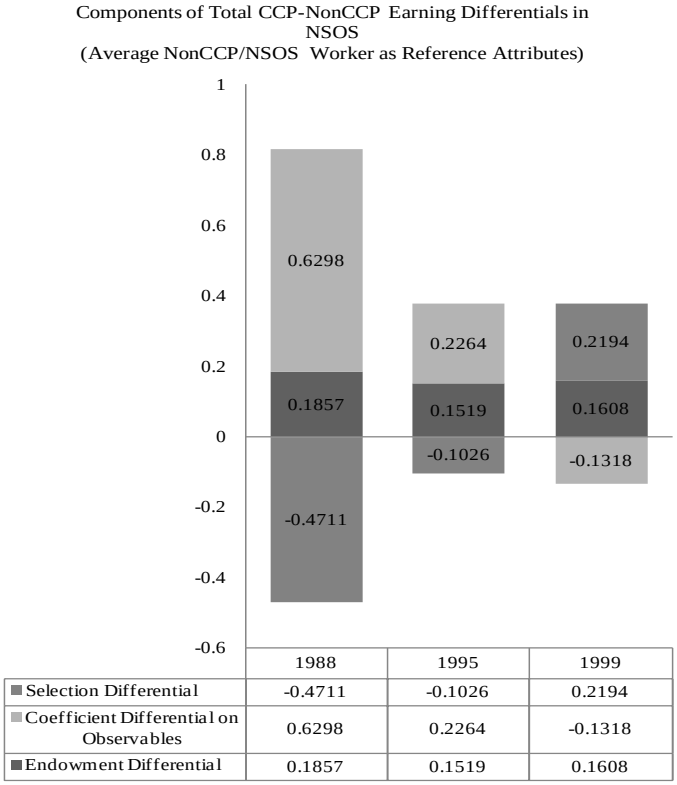
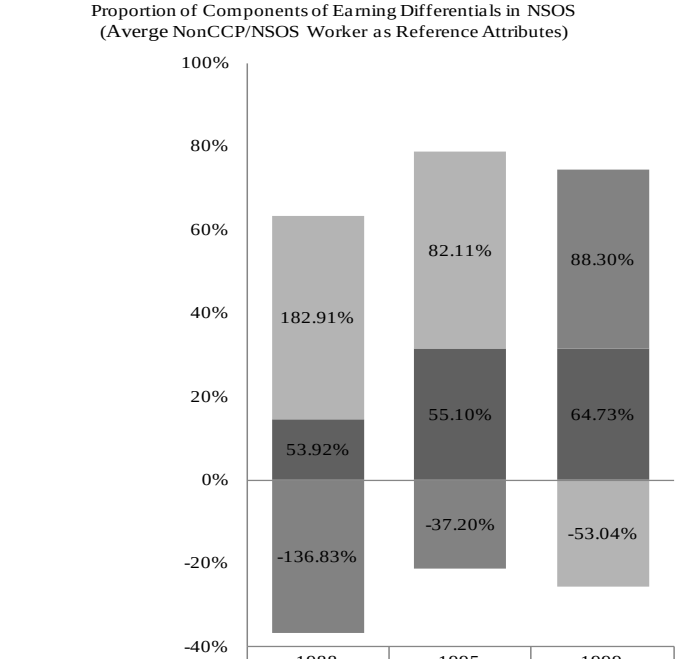


Figure 6.12 Components of Total CCP-NonCCP Earnings Differential in NSOS

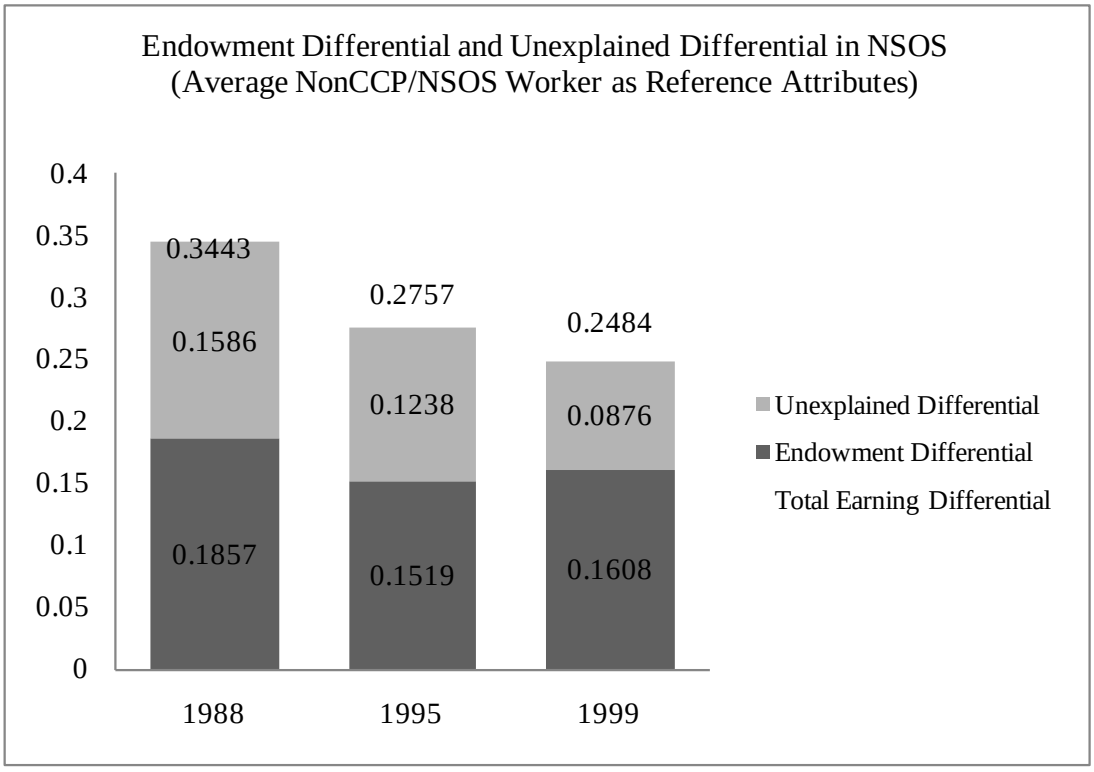


	1988	1995	1999
Selection Differential	-0.4711	-0.1026	0.2194
Coefficient Differential on Observables	0.6298	0.2264	-0.1318
Endowment Differential	0.1857	0.1519	0.1608



	1988	1995	1999
Selection Differential	-136.83%	-37.20%	88.30%
Coefficient Differential on Observables	182.91%	82.11%	-53.04%
Endowment Differential	53.92%	55.10%	64.73%

Figure 6.13 Unexplained Differential v.s. Endowment Differential in NSOS



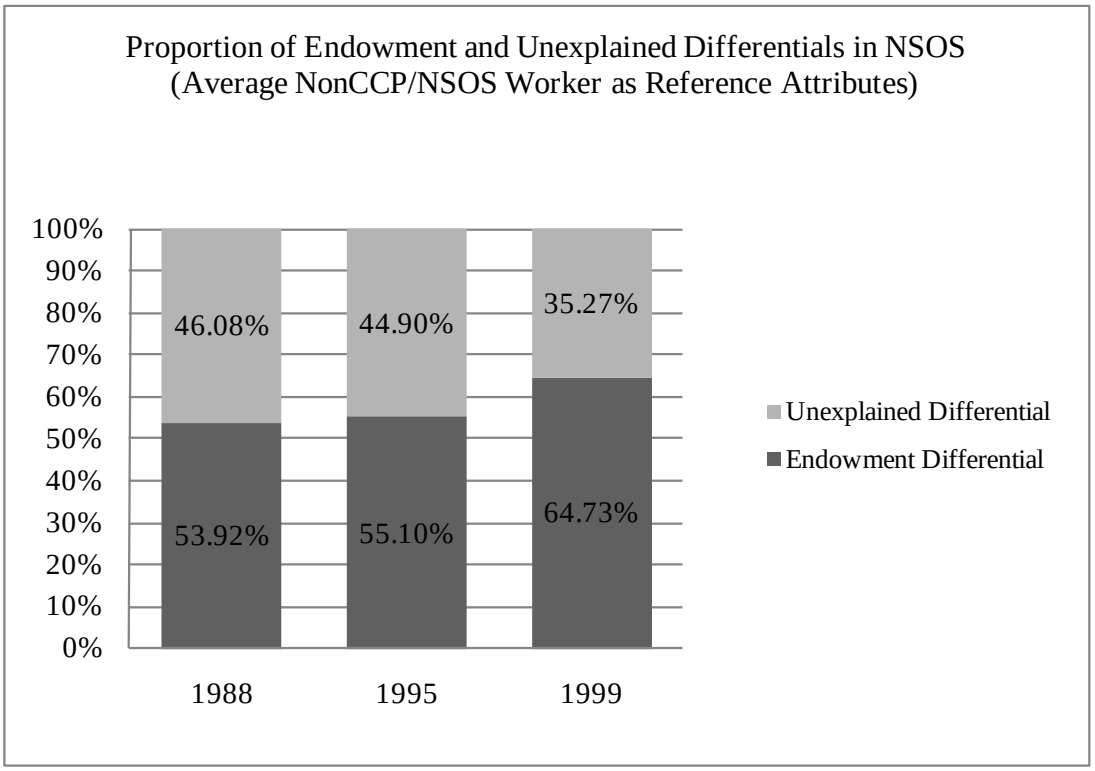
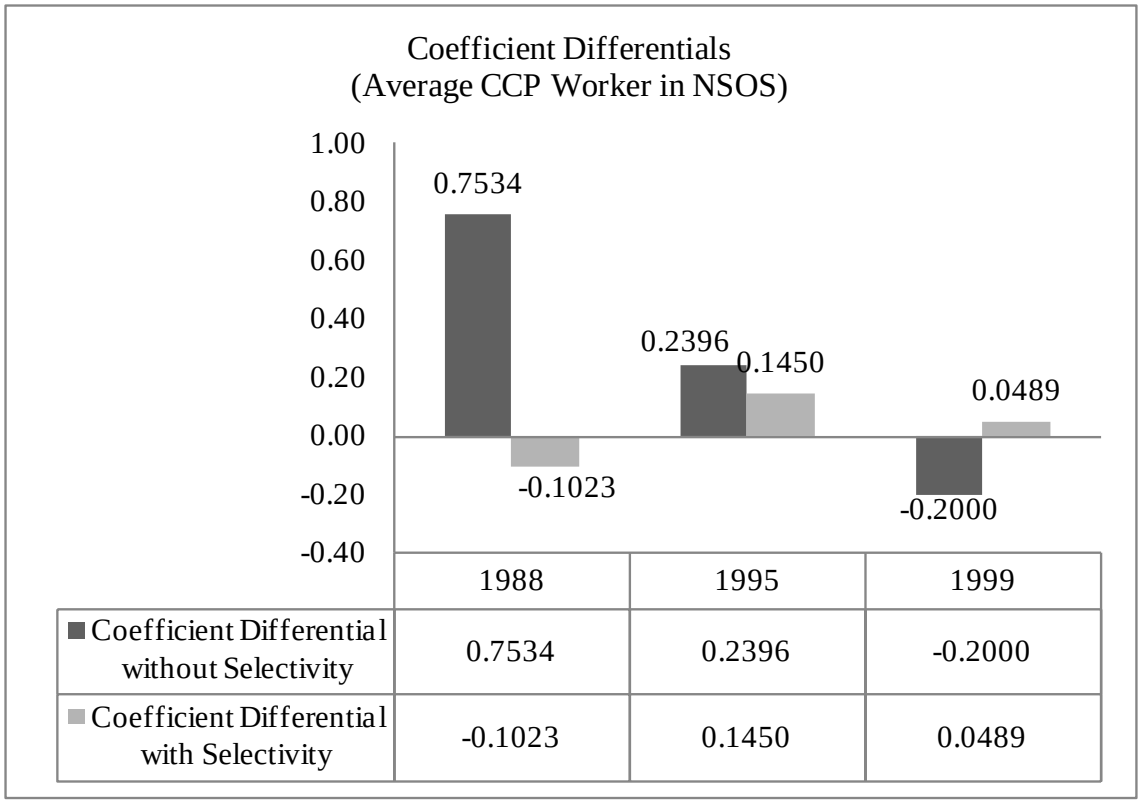
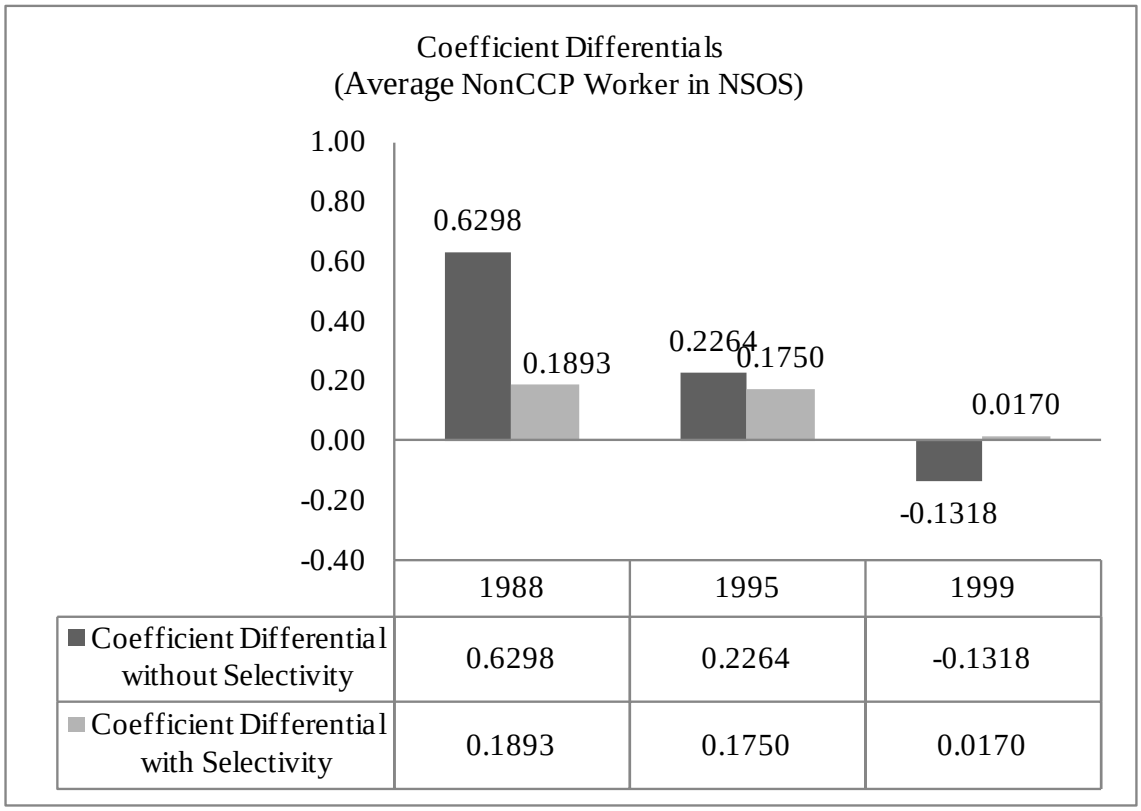


Figure 6.14 Two Types of Coefficient Differential in NSOS



	1988	1995	1999
Coefficient Differential without Selectivity	0.7534	0.2396	-0.2000
Coefficient Differential with Selectivity	-0.1023	0.1450	0.0489



	1988	1995	1999
Coefficient Differential without Selectivity	0.6298	0.2264	-0.1318
Coefficient Differential with Selectivity	0.1893	0.1750	0.0170

Figure 6.15 Total CCP-NonCCP Earnings Differential in Two Sectors

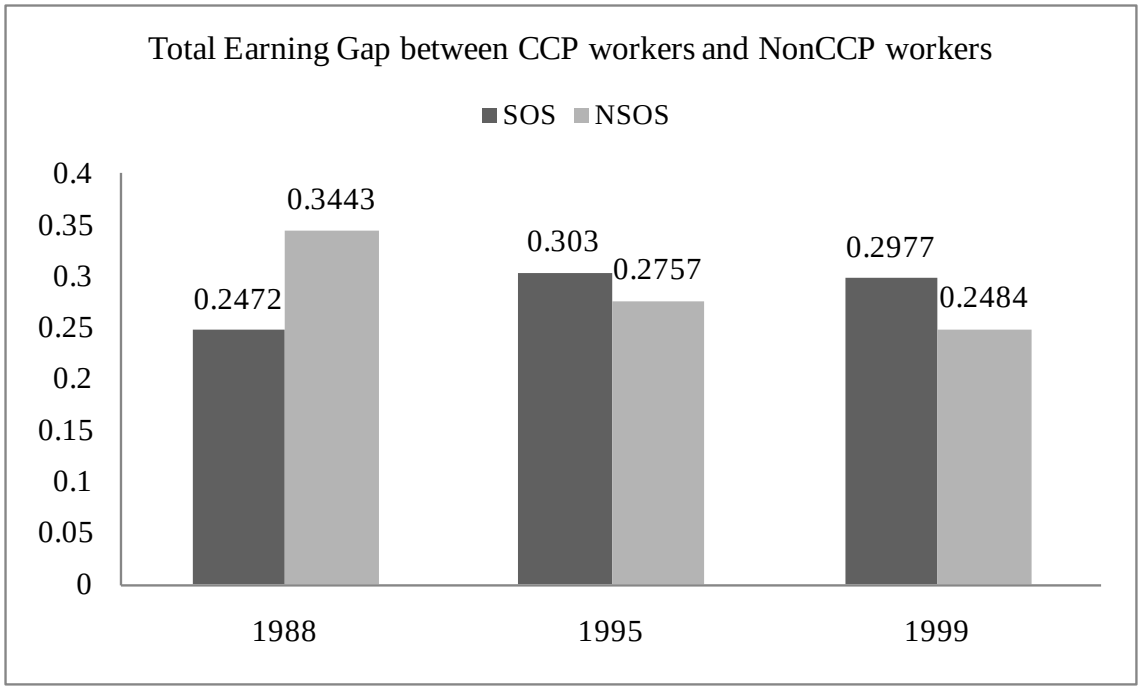
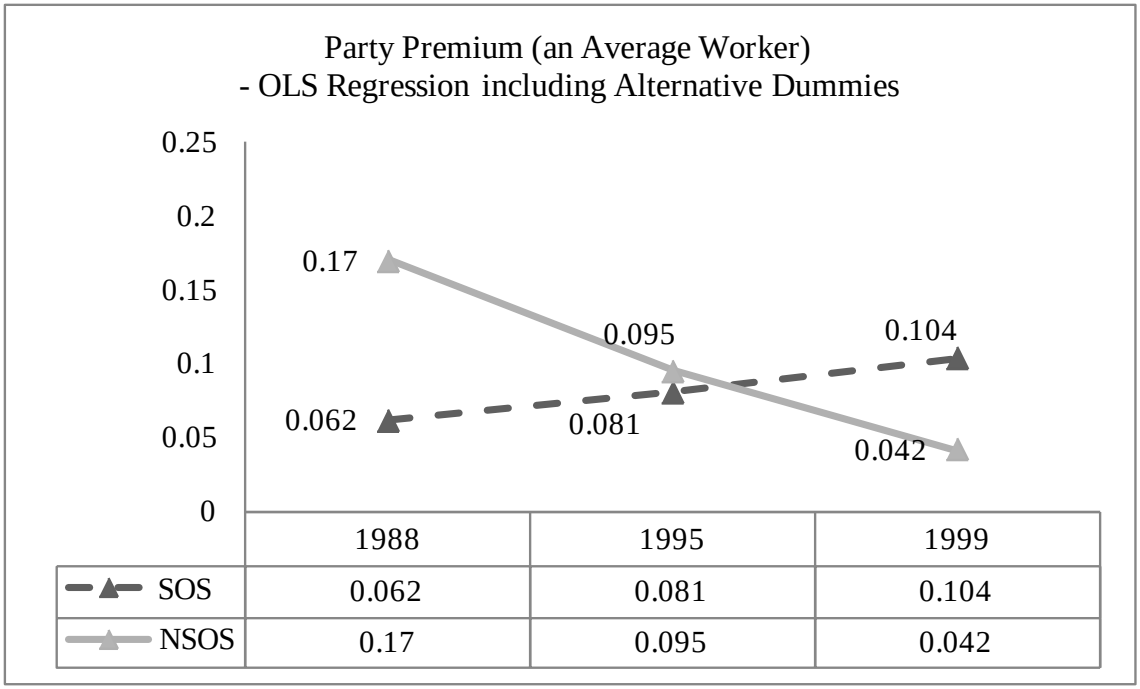


Figure 6.16 Party Premium from OLS Estimates v.s Party Premium from Two Stage Estimation Procedure



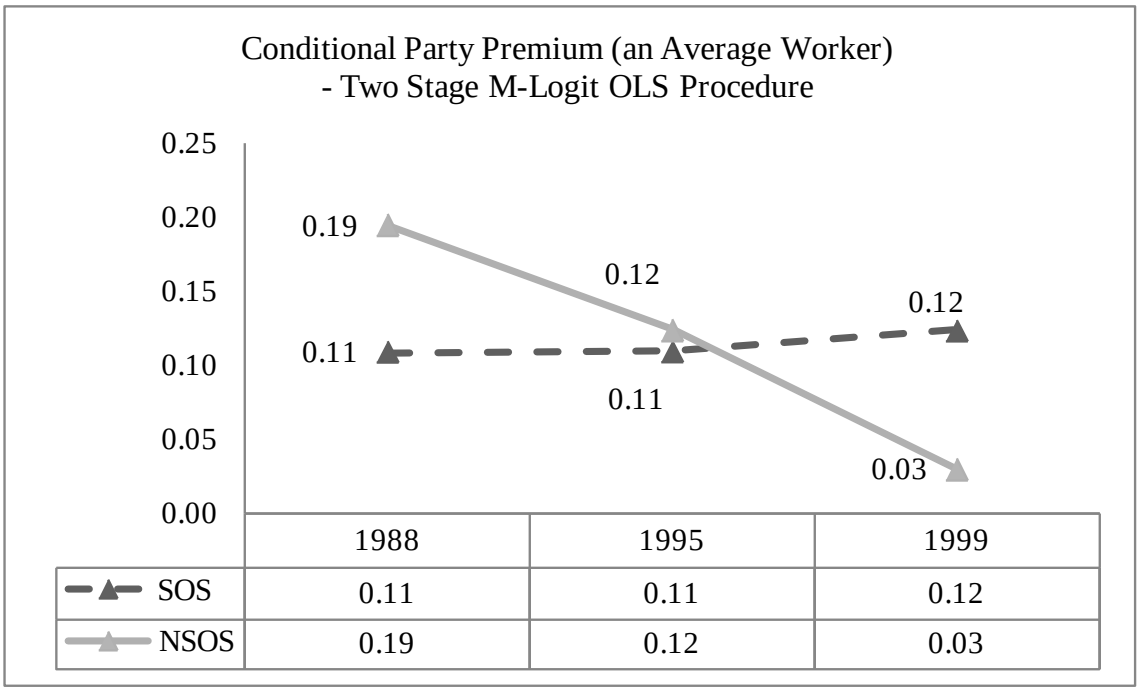
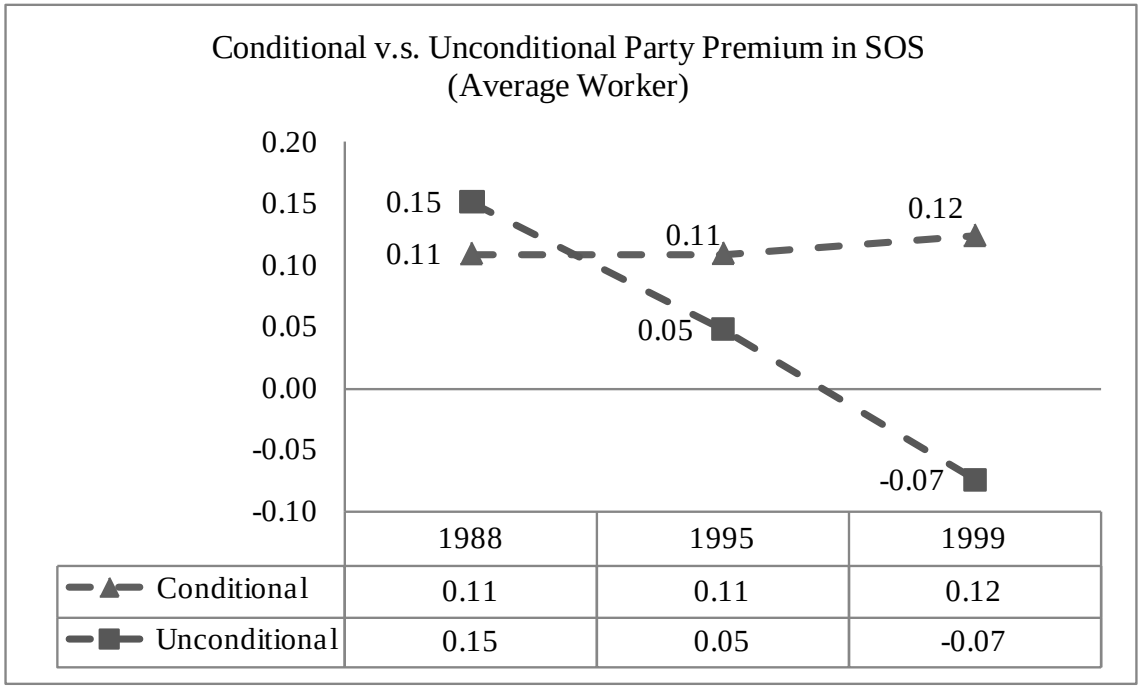


Figure 6.17 Conditional Party Premium v.s. Unconditional Party Premium from Two Stage Estimation Procedure



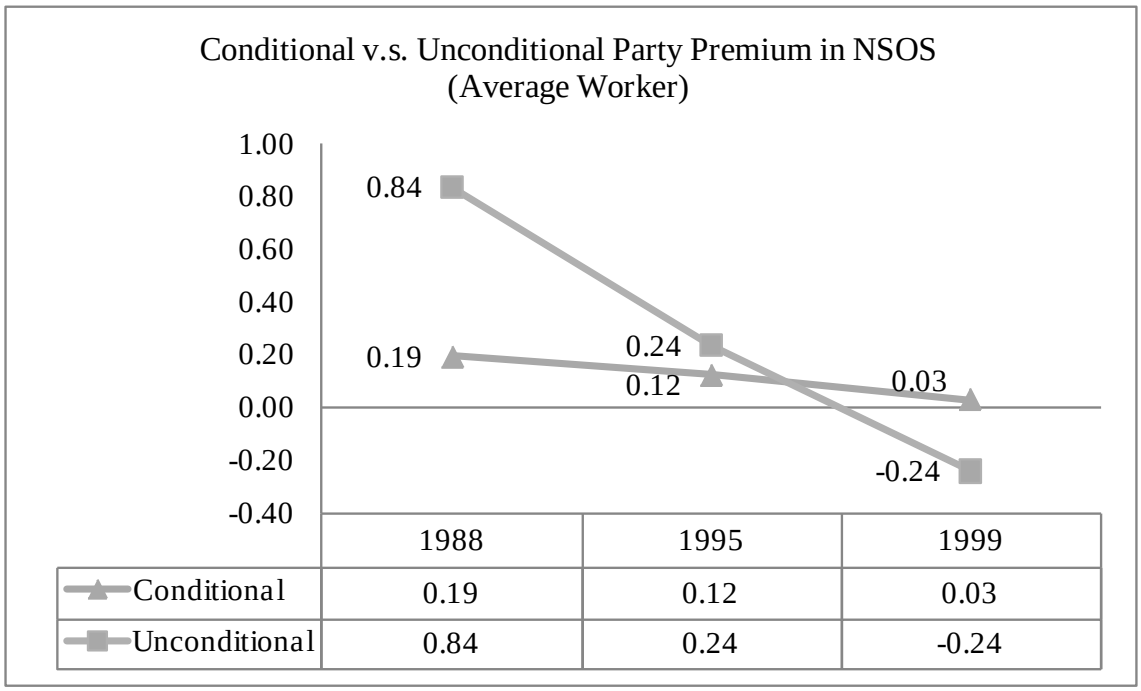
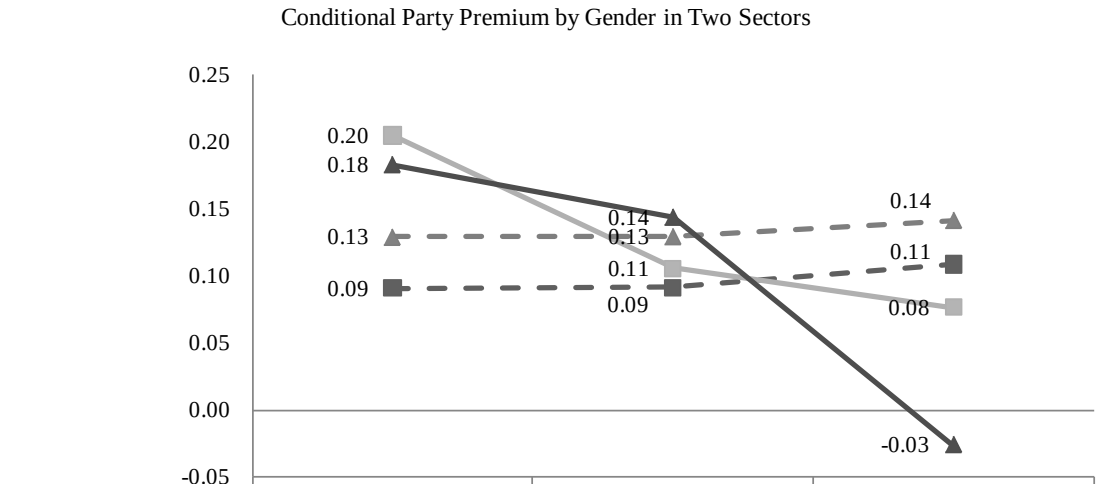
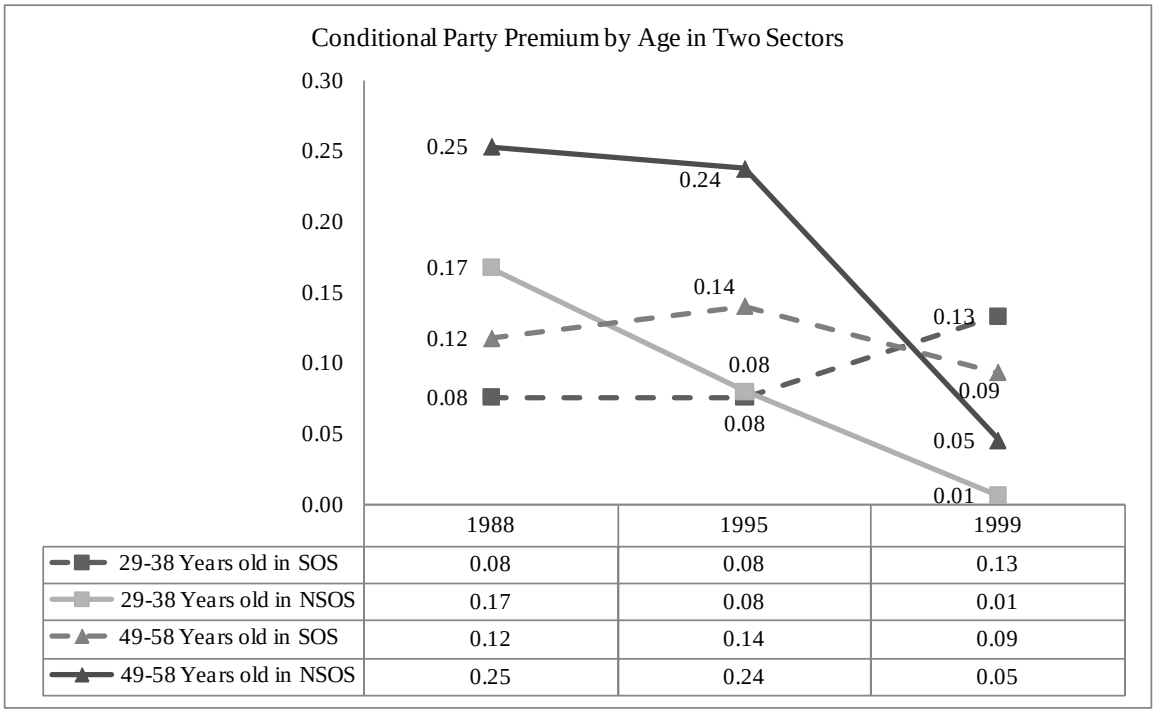


Figure 6.18 Conditional Party Premium by Gender in Two Sectors



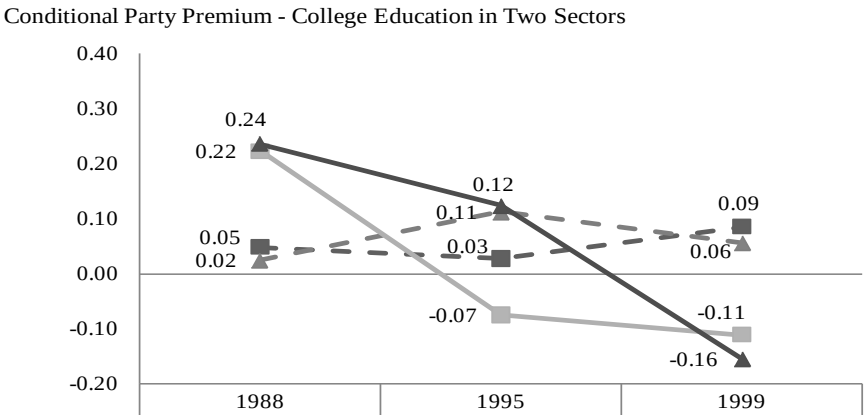
	1988	1995	1999
Males in SOS	0.09	0.09	0.11
Males in NSOS	0.20	0.11	0.08
Females in SOS	0.13	0.13	0.14
Females in NSOS	0.18	0.14	-0.03

Figure 6.19 Conditional Party Premium by Age Cohorts in Two Sectors



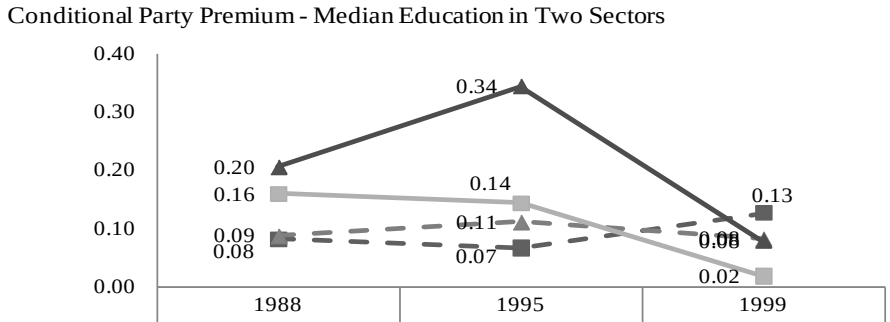
	1988	1995	1999
29-38 Years old in SOS	0.08	0.08	0.13
29-38 Years old in NSOS	0.17	0.08	0.01
49-58 Years old in SOS	0.12	0.14	0.09
49-58 Years old in NSOS	0.25	0.24	0.05

Figure 6.20 Conditional Party Premium by Age Cohorts in Two Sectors for College Education



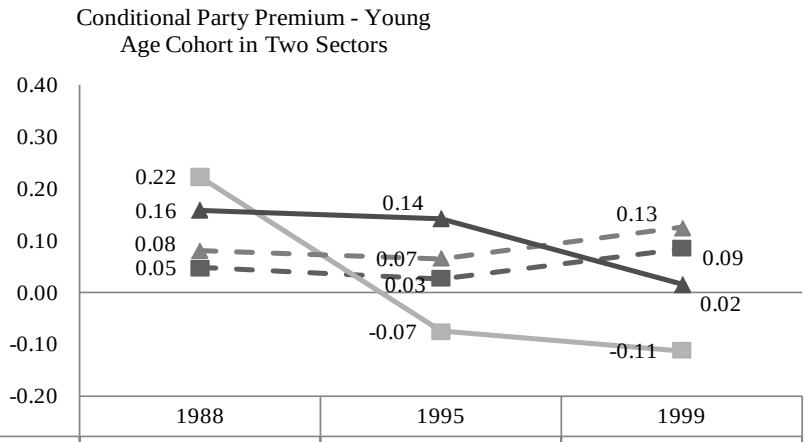
	1988	1995	1999
Ages from 29 to 38 and has a college degree in SOS	0.05	0.03	0.09
Ages from 49 to 58 and has a college degree in SOS	0.02	0.11	0.06
Ages from 29 to 38 and has a college degree in NSOS	0.22	-0.07	-0.11
Ages from 49 to 58 and has a college degree in NSOS	0.24	0.12	-0.16

Figure 6.21 Conditional Party Premium by Age Cohorts in Two Sectors for Median Education

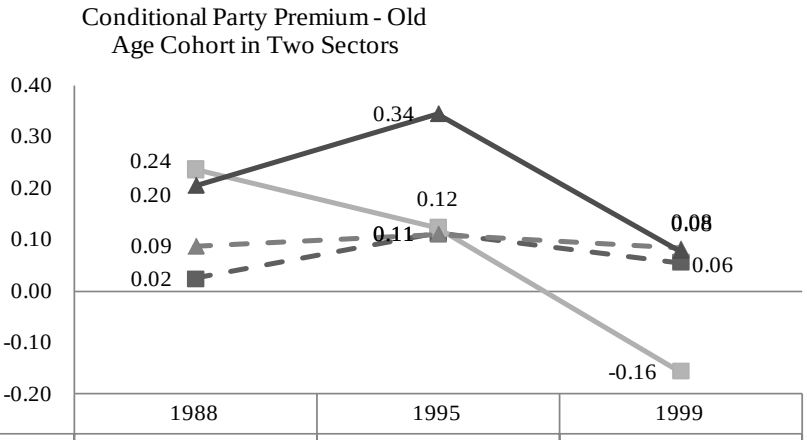


	1988	1995	1999
Ages from 29 to 38 and has a senior-high or professional school degree in SOS	0.08	0.07	0.13
Ages from 49 to 58 and has a senior-high or professional school degree in SOS	0.09	0.11	0.08
Ages from 29 to 38 and has a senior-high or professional school degree in NSOS	0.16	0.14	0.02
Ages from 49 to 58 and has a senior-high or professional school degree in NSOS	0.20	0.34	0.08

Figure 6.22 Conditional Party Premium by Education Levels in Two Sectors for Each Age Cohort



	1988	1995	1999
Ages from 29 to 38 and has a college degree in SOS	0.05	0.03	0.09
Ages from 29 to 38 and has a college degree in NSOS	0.22	-0.07	-0.11
Ages from 29 to 38 and has a senior-high or professional school degree in SOS	0.08	0.07	0.13
Ages from 29 to 38 and has a senior-high or professional school degree in NSOS	0.16	0.14	0.02



	1988	1995	1999
Ages from 49 to 58 and has a college degree in SOS	0.02	0.11	0.06
Ages from 49 to 58 and has a college degree in NSOS	0.24	0.12	-0.16
Ages from 49 to 58 and has a senior-high or professional school degree in SOS	0.09	0.11	0.08
Ages from 49 to 58 and has a senior-high or professional school degree in NSOS	0.20	0.34	0.08

Chapter 7

Conclusion

More than three decades of economic reform have brought remarkable benefits to most people in China. There has been a notable increase in the number of firms in NSOS. As the only Party in power, CCP also adapts to the changing environment to achieve its economic goal. The number of members has risen to 70 million in 2006. The economic impact on CCP members in the labor market has been the subject of numerous economic and sociological studies during the past three decades. This dissertation represents an examination of how the economic returns to CCP members and other workers were different over time, and in each sector of the labor markets in urban China. This paper has further attempted to gain better estimates of the components of the earning gap between CCP members and other workers by estimating a model that treats Party membership affiliation and ownership form at which a worker is employed as endogenous. Explicitly incorporating personal choices of Party membership and ownership of work unit into the estimation of earning functions allows us to analyze the contribution of selectivity and employee characteristics to the observed earning gap.

This dissertation focuses on the labor market in the urban China. Since the CCP came to the power in 1949, the government has created segregation between rural and urban areas under the household registration system. The highly restrictive labor mobility policies excluded rural people from working in the cities[66]. Economic reform in rural China established its own labor market, which generally consists of an agriculture sector and a non-agriculture sector. The returns in the rural labor market are mainly determined by labor productivity. However, the labor market reform in urban China proceeded at a much slower pace and was not as successful as the product market reform (Meng 2000). Due to the segregation of rural and urban areas, the labor markets prove to be different in these two areas. The urban labor market is complicated in terms of invisible constraints placed on labor mobility across regions, multiple ownership structures of enterprises, and political sensitivity. The wage rates, for example, often deviated from the market rate due

[66] Although urban industrialization starting the beginning of the 1990s created a significant demand for rural labor in urban areas, the government still fears to abolish *Hukou* system.

to rigid wage systems and government interventions in the labor market. We would also expect a different Party premium in urban China from that in rural China.

In Chapter 1, milestones of economic reform in urban China throughout a twenty year stretch were reviewed, as was the impact of economic development on individuals' ideology and preference. This, in turn, influences an individual's preference in labor market. The difficulties of an empirical analysis on the pure economic effect of Party membership, which were caused by endogeneity of Party membership affiliation and ownership forms choice, were discussed, as was extensive government regulation, and the lack of a complete market system.

Although a large number of studies have investigated the relationship between Party membership affiliation and earnings in different ownership sectors, the majority of these studies ignore the selection effect of Party membership affiliation and ownership sector choice on the earning equation in China. Most of these studies are subject to the criticism that the returns to Party membership and ownership sector are poorly measured because some unobservable characteristics could potentially influence personal choices of political investment and ownership form of their work units, which, in turn, affect their earnings.

The effects of workers' choices of Party membership and ownership forms on their earnings were discussed in this dissertation paper, relying on an empirical model developed by Lee (1983), which is not subject to this criticism. At the end of the chapter, four questions were presented to be addressed in this paper: (1) How did total earning gap between CCP members and other workers, in the SOS and NSOS, change from 1988 to 1999, respectively? (2) How did contribution of human capital to earnings vary by political status of workers in each sector? (3) How did selectivity effect influence the predicted earning in each sector? (4) How did the Party premium change in the SOS and the NSOS during the early reform period from 1988 to 1995, and during the radical reform period from 1995 to 1999? By comparing CCP members to other workers in each sector, it was found that the total earning differential in the SOS increases dramatically in the early reform period from 1988 to 1995, and then it levels out in 1999, while the earning gap in the NSOS decreases from 1988 to 1999. The contribution of different

treatments to employee characteristics to the total earning gap decreases in the early stage of economic reform, until coefficient differential became negative in favor of other workers in 1999. Such a pattern indicates that the economic reform in the SOS, and the privatization in the NSOS, made the Party premium disappear in the late 1990s. There is evidence that education played a more important role on the earning structure of other workers compared with CCP members in the SOS, while there was no such difference in the NSOS particularly before 1999; the investment on human capital did play an increasingly important role in the earning structure of NonCCP workers in two sectors throughout three stages of the economic reforms. Furthermore, the two-stage selection correction estimation showed that nonrandom assignment of workers acted to increase the earning gap between CCP members and other workers in SOS during 1995 and 1999, while it decreased the earning gap in NSOS during 1988 and 1995. With an assumption of the selection effect differential solely representing varying returns to unobservable characteristics, the Party premium at SOS remained 11% to 12% during these three years. Further, it showed a decreasing trend at NSOS, from 20% in 1988 to 3% in 1999.

Chapter 2 reviewed current empirical studies of economic impact of political capital in China. It mainly focused on personal investments on political capital and human capital in urban China. The studies were grouped into five categories, and their findings were discussed. The studies in the first category examined the returns to political capital and human capital. The second category analyzed if rent seeking exists if CCP membership is used as a device to collect benefits to favored groups. The third category examined whether membership is primarily determined by an individual's demand or by the CCP's screening. The fourth category investigated whether the returns to Party membership decline over time. And finally, the fifth category analyzed how existing literatures address endogeneity of Party membership in earning equation in China.

Chapter 3 began with a brief discussion of selection process for Party membership in China. The criteria for membership have changed over time along with the Party's main goals. After changing the key task to economic modernization in 1978, CCP started to recruit those who were, "more revolutionary, younger, better educated and more

professionally competent". The data showed an increasing educational level among CCP members after 1978.

In Chapter 4, the theoretical model discussed in Liu (2003) was modified by adding an interaction term between people's Party membership choice and ownership sector choice into the utility model. The sample was broken down into four groups based on their choices: CCP/SOS, NonCCP/SOS, CCP/NSOS and NonCCP/NSOS. Given four choices, the empirical model closely followed Lee (1983) to correct for selectivity bias. A very important issue in studying earning determination in the labor market is how to obtain unbiased estimates. By controlling for endogeneity of membership affiliation and ownership sector, selectivity bias was accounted for.

Chapter 5 presented the final estimating earning equation for the workers who are falling into one of four categories based upon their choices. Then the dependent variable and independent variables were defined, and the effects of the control variables on the dependent variable were also discussed. Data were utilized from the 1988, 1995 and 1999 Chinese Household Income Project (CHIP). The pros and cons of comparing CHIP data to NBS data was discussed, as was how the individuals were selected into the sample. A total of 5135 workers (out of 6579) were left for analysis after applying the selection criteria in 1999. Finally, the components of annual earning defined in this dissertation were examined, and detailed summary statistics were provided.

The results from the two-stage selection correction model were presented in Chapter 6. A Multinomial Logit model was applied as the first stage estimation. Workers were grouped into four categories based upon their choices of Party membership affiliation and ownership sectors. Then, the two-stage selection correction estimates in earning equation of each category were analyzed. The robustness of the results were checked by comparing the results of five common provinces for each year to those of all provinces for each year. Finally, the earning differentials of CCP – NonCCP workers were decomposed in each sector, and predicted Party premium in each sector.

In summary, this dissertation examines the effects of personal choices of political capital investment and ownership form of work unit on individuals' earnings, relying on the empirical model developed by Lee (1983). Using CHIP data provided by CASS,

evidence was found to support that the contribution of higher education to CCP workers' earnings is not as much as it is to other workers' at SOS. The investments on the human capital did play an increasingly important role in the earning structure to NonCCP workers at SOS throughout three stages of economic reforms, and certainly more quickly and strongly than it did for CCP workers at SOS. The results at NSOS indicate that different returns brought by different educational levels became more significant to NonCCP workers than it did to CCP workers over time.

Interestingly, the total CCP-NonCCP earning differential favoring CCP workers at SOS increased dramatically during the early reform period from 1988 to 1995 (24.7% to 30%), then it leveled out (remaining at 30%) in 1999. It has decreased over time in NSOS, from 34% in 1988 to 25% in 1999. However, the unexplained proportion in both sectors decreased during these same three years. One of its components, the coefficient differential decreased over time and became negative in 1999. This indicates that Party premium which is due to varying returns to observables tended to disappear during the market liberalization in late 1990s.

The findings also suggest that selectivity considerations act to increase the earning differential which is due to the different returns to the attributes between CCP and other workers at SOS, given that we know that individuals have chosen one of two alternatives in the SOS. In the subsection of predicted Party premium, it was found that, with an assumption of selection effect differential solely representing varying returns to unobservable characteristics, the conditional Party premium at SOS remained 11% to 12% during these three years. Further, it showed a decreasing trend at NSOS, from 20% in 1988 to 3% in 1999. The comparison of conditional Party premium between NSOS and SOS indicates that political capital played a less important role in the payment scheme in NSOS over time. During these three years, Party membership generated a larger earning premium in SOS among less educated workers in the same age cohort. However, in the late 1990s, it was not associated with higher predicted earnings in NSOS for the workers in either age cohort with a college degree.

GDP in China had been growing at double digit rates from the 1970s to the early 1990s (White, 2004). The growth rate surged again after 1997, which was partly due to

the extensive privatization in the late 1990s, in that NSOS could now gain more bargaining power over prices than before. The evidence presented in this dissertation indicates that the Party premium in NSOS existed continuously but decreased during these three years. In contrast, the Party premium in SOS remained flat during the same period. Comparing to SOS, the Party premium in NSOS was higher in 1988 and then it was tied in 1995, but it became much smaller in 1999. There is no doubt that the Party card screens political skills. With an assumption that the NSOS is tied to the market and the returns are determined by productivity, the positive Party premium in the NSOS would indicate that the Party membership is a proxy for both political and productive skills. A flat Party premium in the SOS and a decreasing Party premium in the NSOS suggest that the Party card played a similar role (even more important role) in the payment scheme in the SOS during three years, whereas NSOS valued the political capital less and less over time.

Economic reforms have potential impacts on income distribution. But, CCP membership is losing its earning power at least in the NSOS. As was found in this dissertation, the CCP would tend to alleviate the earning advantage of Party members that is due to unequal treatment to Party membership. Therefore, the challenge of public policy, as stated by Morduch and Sicular (2000), is if CCP should allow the labor market to be completely market-oriented so that other workers could totally and fairly compete with CCP members, or if CCP should permit the economic advantages of CCP members to secure the recruitment. The findings in this dissertation disclose that CCP sacrificed its benefits in order to achieve its economic goal.

APPENDICES

Appendix A

Table A.1 Description of Raw CHIP Data in Urban China

Year	1988	1995	1999
# of households	9,009	6,931	3,255
# of persons	3,1827	21,694	9,637
Provinces	Anhui, Beijing, Gansu, Guangdong, Henan, Hubei, Jiangsu, Liaoning, Shanxi, Yunan. Liaoning and Shanxi	Anhui, Beijing, Gansu, Guangdong, Henan, Hubei, Jiangsu, Liaoning, Shanxi, Yunan, and Sichuan	Beijing, Gansu, Henan, Jiangsu, Liaoning, and Sichuan
Number of provinces	10	11, adding Sichuan	6
5 common Provinces in all three years	Beijing, Gansu, Henan, Jiangsu, Liaoning,		
10 common Provinces in 1988 and 1995	Anhui, Beijing, Gansu, Guangdong, Henan, Hubei, Jiangsu, Liaoning, Shanxi, and Yunan.		
6 common provinces in 1995 and 1999		Beijing, Gansu, Henan, Jiangsu, Liaoning, and Sichuan.	

Appendix B

Additional Information on Table 5.1

The CHIP sample in Table 1 includes only individuals in three survey years that are between 18 and 65 years of age and currently employed in urban area. CHIP survey in the urban area includes only households with urban registration (*hukou*). But it excludes most rural-urban migrant households. The exclusion of the floating population from the rural area might be one of reasons why percentage of SOS in CHIP is higher than that of NBS.

All NBS data is from Chinese Statistical Year book 2000. NBS Data of SOS units come from Urban data in the Table '5-4 Number of Employed Persons at the Year-end by Residence in Urban and Rural Areas'. It includes the data by ownership in urban and rural areas, respectively.

The following is how NBS defines employed persons: Employed Persons refer to the persons who are engaged in social working and receive remuneration payment or earn business income, including total staff and workers, re-employed retirees, employers of private enterprises, self-employed workers, employees in private enterprises and individual economy, employees in township enterprises(in rural area), employed persons in the rural areas, and other employed persons (including teachers in the schools run by the local people, people engaged in religious profession and the servicemen, etc.). This indicator reflects the actual utilization of total labor force during a certain period of time and is often used for the research on China's economic situation and national power.

From the same table, I take the provinces that are included in CHIP survey. Table B.1 shows the distribution of ownership by regions and its subtotal. Comparing to % SOS including all provinces in the NBS (59% and 41%), %SOS in the provinces covered in CHIP survey is bigger (64% and 55%), but still smaller than %SOS in CHIP sample. One of reason would be that CHIP survey did not include floating population from the rural area. The floating population from the rural area usually works in the NSOS.

NBS Data of Male come from the Table '4-1 Population and its Composition', including population in both urban and rural area. But there is No gender information for urban and rural area separately. NBS data in 1988was adjusted on the basis of the 1982

and 1990 National Population census. Since 1990, NBS data have been estimated on the basis of the annual National Sample Surveys on population changes.

China Statistical Year Book 2000 include Table '5-20 Average Wage of Staff and Workers and Related Indices', Table '5-23 Average Wage of Staff and Workers in State-owned Units by Sector', Table '5-24 Average Wage of Staff and Workers in Urban Collective-owned Units by Sector', Table '5-22 Average Wage of Staff and Workers in Units of Other Types of Ownership by Sector'. The information on Staff and Workers is more comparable to the CHIP sample of workers in urban China. Table 5.1 shows the average wage from NBS and CHIP. In the book, the ownerships in rural areas include township and village enterprises, private enterprises and self-employed individuals, while the ownerships in urban area include State-owned Units, urban collective-owned units and other ownerships such as limited liability cooperation.

Here is the definition Staff and workers in each table by NBS:

Staff and Workers in State-owned Economic Units refer to the persons who work in the state-owned economic units or their attached units and are listed in their payrolls.

Staff and Workers of Collective Owned Units in Urban Areas refer to the persons who work in collective owned units in urban areas and their administration departments and receive payment there.

Staff and Workers in Units of Other types of Ownership refer to those who work in (and receive payment there) enterprises and institutions of joint ownership, share holding, foreign ownership, and ownership by entrepreneurs from Hong Kong, Macao, and Taiwan.

Table B.1 Distribution of Ownership Forms – NBS v.s. CHIP

	NBS		CHIP	
1995	State-owned Units	Non-State-owned Units	State-owned Units	Non-State-owned Units
Beijing	4.3%	1.7%	6.2%	0.7%
Liaoning	8.2%	5.5%	8.9%	1.9%
Jiangsu	6.8%	4.8%	7.6%	3.3%
Henan	7.5%	3.3%	7.3%	1.4%
Gansu	2.6%	0.8%	4.6%	0.6%
Sichuan	8.8%	4.8%	9.6%	2.2%
Shanxi	4.5%	1.5%	8.6%	1.0%
Anhui	4.4%	2.7%	5.3%	1.9%
Hubei	6.8%	3.7%	8.8%	1.3%
Guangdong	6.6%	6.7%	6.3%	2.6%
Yunnan	3.2%	1.0%	8.6%	1.2%
Subtotal	63.6%	36.3%	81.8%	18.2%

	NBS		CHIP	
1999	State-owned Units	Non-State-owned Units	State-owned Units	Non-State-owned Units
Beijing	7.1%	3.9%	13.0%	3.1%
Liaoning	11.1%	10.1%	10.8%	4.7%
Jiangsu	11.3%	10.6%	13.3%	3.1%
Henan	11.8%	10.3%	15.9%	2.8%
Gansu	4.2%	2.3%	11.3%	2.2%
Sichuan	10.0%	6.9%	14.9%	4.9%
Subtotal	55.4%	44.2%	79.2%	20.8%

Appendix C

Additional Information from NBS

Regarding NBS data on the education, I can only find the information at an overall level without separating urban area from rural area in 1999. In the same year, there is another table ‘5-28 Composition of Employed Persons by Educational Level and by Region’, including urban and rural area together. NBS does not have the categories ‘professional school’ and ‘two-year College’.

Regarding NBS data on age decomposition, I can only find the information for 1995 and 1999 without separating urban data from rural data. In order to compare to NBS data, I use the full CHIP sample in urban area rather that current workers only (See Table C.1).

Table C.1 Distribution of Age Cohorts - NBS v.s. CHIP

	1995		1999	
Age composition	NSB	CHIP (URBAN)	NSB	CHIP (URBAN)
Age 0 - 14	3,306,220	3,646	290,145	1,222
	26.73%	16.80%	23.94%	12.68%
Age 15 - 64	8,232,607	16,728	829,312	7,437
	66.57%	77.09%	68.43%	77.17%
Age 65 and over	828,127	1,317	92,507	972
	6.70%	6.07%	7.63%	10.09%
Total	12,366,954	21,698	1,211,965	9,637

Note: The data in 1995 from NSB are from the sampling survey in Oct.1 1995. The sample proportion is 1.04%.

The data in 1999 from NSB are from the sampling survey on population changes in 1999. The sample fraction is 0.976‰.

CHIP data in this table include all individuals in urban data rather than current workers only.

Appendix D

Additional Information on Economic Sectors

Based on the data and classification of ownership sectors, same economic sector could exist in both ownership sectors. For example, a firm in health sector could a State-owned firm or a Non-state owned firm. I did a robust test with a specification without economic sector dummies from first and second stage. It was found that exclusion of economic sectors did not significantly change the economic significance of the coefficients. The test results are available upon a request.

Table D.1 Distribution of Economic Sectors in CHIP

Year	Ownership Sectors	Economic Sectors									
		industry	construction	transportation	commerce	real_estate	health	arts	organization	otherecosector	Total
1988	NSOS	2,161	172	164	769	145	82	40	39	211	3,783
	SOS	5,256	427	1,007	1,746	282	720	1,223	1,450	1,426	13,537
	Total	7,417	599	1,171	2,515	427	802	1,263	1,489	1,637	17,320
1995	NSOS	1,062	57	82	426	120	35	26	42	78	1,928
	SOS	3,324	251	459	1,110	293	453	755	1,236	771	8,652
	Total	4,386	308	541	1,536	413	488	781	1,278	849	10,580
1999	NSOS	348	33	56	184	41	27	16	13	207	925
	SOS	955	159	403	225	230	212	366	425	556	3,531
	Total	1,303	192	459	409	271	239	382	438	763	4,456
Note: # of workers is shown in each cell											

Year	Ownership Sectors	Economic Sectors									
		industry	construction	transportation	commerce	real_estate	health	arts	organization	otherecosector	Total
1988	NSOS	29%	29%	14%	31%	34%	10%	3%	3%	13%	22%
	SOS	71%	71%	86%	69%	66%	90%	97%	97%	87%	78%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
1995	NSOS	24%	19%	15%	28%	29%	7%	3%	3%	9%	18%
	SOS	76%	81%	85%	72%	71%	93%	97%	97%	91%	82%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
1999	NSOS	27%	17%	12%	45%	15%	11%	4%	3%	27%	21%
	SOS	73%	83%	88%	55%	85%	89%	96%	97%	73%	79%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Note: % of Rows is shown in each cell											

Table D.1 (Continued): Distribution of Economic Sectors in CHIP

Year	Ownership Sectors	Economic Sectors									
		industry	construction	transportation	commerce	real_estate	health	arts	organization	otherecosector	Total
1988	NSOS	57%	5%	4%	20%	4%	2%	1%	1%	6%	100%
	SOS	39%	3%	7%	13%	2%	5%	9%	11%	11%	100%
	Total	43%	3%	7%	15%	2%	5%	7%	9%	9%	100%
1995	NSOS	55%	3%	4%	22%	6%	2%	1%	2%	4%	100%
	SOS	38%	3%	5%	13%	3%	5%	9%	14%	9%	100%
	Total	41%	3%	5%	15%	4%	5%	7%	12%	8%	100%
1999	NSOS	38%	4%	6%	20%	4%	3%	2%	1%	22%	100%
	SOS	27%	5%	11%	6%	7%	6%	10%	12%	16%	100%
	Total	29%	4%	10%	9%	6%	5%	9%	10%	17%	100%
Note: % of Columns is shown in each cell											

Appendix E

Suppose ε_{ij} and ω_{ij} are joint normally distributed (Heckman 1974) as the following:

$$\begin{bmatrix} \omega \\ \varepsilon \end{bmatrix} \sim N\left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \sigma_{\omega\varepsilon} \\ \sigma_{\varepsilon\omega} & \sigma_{\varepsilon}^2 \end{pmatrix} \right]$$

Since $\varepsilon_{ij} \mid \omega_{ij} \sim N\left[\sigma_{\varepsilon\omega}\omega_{ij}, \sigma_{\varepsilon}^2 - \sigma_{\varepsilon\omega}\sigma_{\omega\varepsilon}\right]$, then we have

$\varepsilon_{ij} = \sigma_{\omega\varepsilon}\omega_{ij} + \xi$, where $\xi \sim N\left[0, \sigma_{\varepsilon}^2 - \sigma_{\varepsilon\omega}\sigma_{\omega\varepsilon}\right]$

$$E\left[Y_{ij} \middle| I_i = j\right] = E\left[Y_{ij} \middle| \omega_{ij} < \gamma_j' Z_i\right] = \beta_j' X_i + E\left[\sigma_{\omega\varepsilon}\omega_{ij} + \xi \middle| \omega_{ij} < \gamma_j' Z_i\right]$$

$$= \beta_j' X_i + \sigma_{\omega\varepsilon} E\left[\omega_{ij} \middle| \omega_{ij} < \gamma_j' Z_i\right]$$

$$= \beta_j' X_i + \sigma_{\omega\varepsilon} E\left[\omega_{ij} \middle| \omega_{ij}^* < \Phi^{-1}\left[F(\gamma_j' Z_i)\right]\right] \qquad \text{where } \omega_{ij}^* \sim N(0,1) \text{ and so } E\left[z \mid z > c\right] = \frac{\phi(c)}{1-\Phi(c)}$$

$$= \beta_j' X_i - \sigma_{\omega\varepsilon}\left[\frac{\phi\left\{\Phi^{-1}\left[F(\gamma_j' Z_i)\right]\right\}}{F(\gamma_j' Z_i)}\right] \quad \text{where } \sigma_{\omega\varepsilon} = \sigma_{\varepsilon}\frac{\sigma_{\omega\varepsilon}}{\sigma_{\varepsilon}\sigma_{\omega}} = \sigma_{\varepsilon}\rho_{\omega\varepsilon} \text{ and } \sigma_{\omega} = 1$$

where σ_{ε} is the standard deviation of the error term ε_{ij}, $\rho_{\omega\varepsilon}$ is the correlation coefficient between ε_{ij} and ω_{ij}^*.

Appendix F

Table F.1 Pairwise Comparision of Coefficients: CCP/SOS v.s. NonCCP/SOS

	Coefficient		S.E.		Difference	Test statistic	
1988	CCP/SOS	NonCCP/SOS	CCP/SOS	NonCCP/SOS		Absolute Value	
four years' college or more	0.167	0.293	0.039	0.017	-0.126	2.96	***
two or three years' college	0.113	0.198	0.042	0.016	-0.085	1.89	**
professional school	0.051	0.126	0.027	0.01	-0.075	2.60	***
senior high school	0.045	0.066	0.02	0.009	-0.021	0.96	
Male	0.027	0.097	0.028	0.007	-0.07	2.43	***

	Coefficient		S.E.		Difference	Test statistic	
1995	CCP/SOS	NonCCP/SOS	CCP/SOS	NonCCP/SOS		Difference	
four years' college or more	0.219	0.383	0.064	0.028	-0.164	2.35	***
two or three years' college	0.138	0.247	0.061	0.022	-0.109	1.68	**
professional school	0.07	0.198	0.046	0.022	-0.128	2.51	***
senior high school	0.03	0.072	0.041	0.019	-0.042	0.93	
Male	0.05	0.14	0.044	0.014	-0.09	1.95	**
	Coefficient		S.E.		Difference	Wald statistic	
1999	CCP/SOS	NonCCP/SOS	CCP/SOS	NonCCP/SOS		Difference	
four years' college or more	0.355	0.616	0.128	0.048	-0.261	1.91	**
two or three years' college	0.277	0.385	0.105	0.037	-0.108	0.97	
professional school	0.13	0.193	0.084	0.036	-0.063	0.69	
senior high school	0.019	0.116	0.062	0.028	-0.097	1.43	*
Male	0.064	0.086	0.043	0.023	-0.022	0.45	

* p<.10, ** p<.05, *** p<.01

Table F.2 Comparison of Coefficients in CCP/SOS across Time

CCP/SOS	1988	1995	1988	1995			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.167	0.219	0.039	0.064	0.052	0.69	
two or three years' college	0.113	0.138	0.042	0.061	0.025	0.34	
professional school	0.051	0.07	0.027	0.046	0.019	0.36	
senior high school	0.045	0.03	0.02	0.041	-0.015	-0.33	
male	0.027	0.05	0.028	0.044	0.023	0.44	
CCP/SOS	1995	1999	1995	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.219	0.355	0.064	0.128	0.136	0.95	
two or three years' college	0.138	0.277	0.061	0.105	0.139	1.14	
professional school	0.07	0.13	0.046	0.084	0.06	0.63	
senior high school	0.03	0.019	0.041	0.062	-0.011	-0.15	
male	0.05	0.064	0.044	0.043	0.014	0.23	
CCP/SOS	1988	1999	1988	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.167	0.355	0.039	0.128	0.188	1.40	*
two or three years' college	0.113	0.277	0.042	0.105	0.164	1.45	*
professional school	0.051	0.13	0.027	0.084	0.079	0.90	
senior high school	0.045	0.019	0.02	0.062	-0.026	-0.40	
male	0.027	0.064	0.028	0.043	0.037	0.72	

* p<.10, ** p<.05, *** p<.01

Table F.3 Comparison of Coefficients in NonCCP/SOS across Time

NonCCP/SOS	1988	1995	1988	1995			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.293	0.383	0.017	0.028	0.09	2.75	***
two or three years' college	0.198	0.247	0.016	0.022	0.049	1.80	**
professional school	0.126	0.198	0.01	0.022	0.072	2.98	***
senior high school	0.066	0.072	0.009	0.019	0.006	0.29	
Male	0.097	0.14	0.007	0.014	0.043	2.75	***

NonCCP/SOS	1995	1999	1995	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.383	0.616	0.028	0.048	0.233	4.19	***
two or three years' college	0.247	0.385	0.022	0.037	0.138	3.21	***
professional school	0.198	0.193	0.022	0.036	-0.005	-0.12	
senior high school	0.072	0.116	0.019	0.028	0.044	1.30	*
Male	0.14	0.086	0.014	0.023	-0.054	-2.01	**

NonCCP/SOS	1988	1999	1988	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.293	0.616	0.017	0.048	0.323	6.34	***
two or three years' college	0.198	0.385	0.016	0.037	0.187	4.64	***
professional school	0.126	0.193	0.01	0.036	0.067	1.79	**
senior high school	0.066	0.116	0.009	0.028	0.05	1.70	**
Male	0.097	0.086	0.007	0.023	-0.011	-0.46	

* p<.10, ** p<.05, *** p<.01

Table F.4 Pairwise Comparision of Coefficients: CCP/NSOS v.s. NonCCP/NSOS

	Coefficient		S.E.		Test statistic	
1988	CCP/NSOS	NonCCP/NSOS	CCP/NSOS	NonCCP/NSOS	Difference	
four years' college or more	0.27	-0.144	0.098	0.263	1.48	*
two or three years' college	0.229	-0.039	0.1	0.172	1.35	*
professional school	0.097	-0.074	0.079	0.144	1.04	
senior high school	0.107	0.048	0.074	0.057	0.63	
Male	0.147	0.041	0.06	0.071	1.14	

	Coefficient		S.E.		Test statistic	
1995	CCP/NSOS	NonCCP/NSOS	CCP/NSOS	NonCCP/NSOS	Difference	
four years' college or more	0.285	0.499	0.188	0.149	0.89	
two or three years' college	0.174	0.335	0.118	0.091	1.08	
professional school	0.255	0.253	0.091	0.079	-0.02	
senior high school	0.154	0.083	0.09	0.04	-0.72	
Male	0.122	0.154	0.074	0.034	-0.39	

	Coefficient		S.E.		Test statistic	
1999	CCP/NSOS	NonCCP/NSOS	CCP/NSOS	NonCCP/NSOS	Difference	
four years' college or more	0.501	0.688	0.269	0.138	0.62	
two or three years' college	0.137	0.497	0.206	0.091	1.60	*
professional school	0.178	0.267	0.165	0.088	0.48	
senior high school	-0.005	0.216	0.136	0.066	1.46	*
Male	0.369	0.251	0.098	0.047	1.09	

* p<.10, ** p<.05, *** p<.01

Table F.5 Comparison of Coefficients in CCP/NSOS across Time

CCP/NSOS	1988	1995	1988	1995			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.27	0.285	0.098	0.188	0.015	0.07	
two or three years' college	0.229	0.174	0.1	0.118	-0.055	-0.36	
professional school	0.097	0.255	0.079	0.091	0.158	1.31	*
senior high school	0.107	0.154	0.074	0.09	0.047	0.40	
Male	0.147	0.122	0.06	0.074	-0.025	-0.26	

CCP/NSOS	1995	1999	1995	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.285	0.501	0.188	0.269	0.216	0.66	
two or three years' college	0.174	0.137	0.118	0.206	-0.037	-0.16	
professional school	0.255	0.178	0.091	0.165	-0.077	-0.41	
senior high school	0.154	-0.005	0.09	0.136	-0.159	-0.97	
Male	0.122	0.369	0.074	0.098	0.247	2.01	**

CCP/NSOS	1988	1999	1988	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.27	0.501	0.098	0.269	0.231	0.81	
two or three years' college	0.229	0.137	0.1	0.206	-0.092	-0.40	
professional school	0.097	0.178	0.079	0.165	0.081	0.44	
senior high school	0.107	-0.005	0.074	0.136	-0.112	-0.72	
Male	0.147	0.369	0.06	0.098	0.222	1.93	**

* p<.10, ** p<.05, *** p<.01

Table F.6 Comparison of Coefficients in NonCCP/NSOS across Time

NonCCP/NSOS	1988	1995	1988	1995			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	-0.144	0.499	0.263	0.149	0.643	2.13	**
two or three years' college	-0.039	0.335	0.172	0.091	0.374	1.92	**
professional school	-0.074	0.253	0.144	0.079	0.327	1.99	**
senior high school	0.048	0.083	0.057	0.04	0.035	0.50	
Male	0.041	0.154	0.071	0.034	0.113	1.44	*
NonCCP/NSOS	1995	1999	1995	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	0.499	0.688	0.149	0.138	0.189	0.93	
two or three years' college	0.335	0.497	0.091	0.091	0.162	1.26	
professional school	0.253	0.267	0.079	0.088	0.014	0.12	
senior high school	0.083	0.216	0.04	0.066	0.133	1.72	**
Male	0.154	0.251	0.034	0.047	0.097	1.67	**
NonCCP/NSOS	1988	1999	1988	1999			
	Coefficient		S.E.		Difference	Test statistic	
four years' college or more	-0.144	0.688	0.263	0.138	0.832	2.80	***
two or three years' college	-0.039	0.497	0.172	0.091	0.536	2.75	***
professional school	-0.074	0.267	0.144	0.088	0.341	2.02	**
senior high school	0.048	0.216	0.057	0.066	0.168	1.93	**
Male	0.041	0.251	0.071	0.047	0.21	2.47	***

* p<.10, ** p<.05, *** p<.01

Table F.7 Comparison of Coefficients in NonCCP/NSOS across Time

	Coefficient		S.E.		Test statistic	
1988	CCP/SOS	CCP/NSOS	CCP/SOS	CCP/NSOS	Difference	
four years' college or more	0.167	0.27	0.039	0.098	0.98	
two or three years' college	0.113	0.229	0.042	0.1	1.07	
professional school	0.051	0.097	0.027	0.079	0.55	
senior high school	0.045	0.107	0.02	0.074	0.81	
Male	0.027	0.147	0.028	0.06	1.81	**

	Coefficient		S.E.		Test statistic	
1995	CCP/SOS	CCP/NSOS	CCP/SOS	CCP/NSOS	Difference	
four years' college or more	0.219	0.285	0.064	0.188	-0.33	
two or three years' college	0.138	0.174	0.061	0.118	-0.27	
professional school	0.07	0.255	0.046	0.091	-1.81	**
senior high school	0.03	0.154	0.041	0.09	-1.25	
Male	0.05	0.122	0.044	0.074	0.84	

	Coefficient		S.E.		Test statistic	
1999	CCP/SOS	CCP/NSOS	CCP/SOS	CCP/NSOS	Difference	
four years' college or more	0.355	0.501	0.128	0.269	-0.49	
two or three years' college	0.277	0.137	0.105	0.206	0.61	
professional school	0.13	0.178	0.084	0.165	-0.26	
senior high school	0.019	-0.005	0.062	0.136	0.16	
Male	0.064	0.369	0.043	0.098	2.85	***

* p<.10, ** p<.05, *** p<.01

Table F.8 Pairwise Comparision of Coefficients: NonCCP/SOS v.s. NonCCP/NSOS

	Coefficient		S.E.		Test statistic	
1988	NCCP/SOS	NonCCP/NSOS	NCCP/SOS	NonCCP/NSOS	Difference	
four years' college or more	0.293	-0.144	0.017	0.263	-1.66	**
two or three years' college	0.198	-0.039	0.016	0.172	-1.37	*
professional school	0.126	-0.074	0.01	0.144	-1.39	*
senior high school	0.066	0.048	0.009	0.057	-0.31	
Male	0.097	0.041	0.007	0.071	-0.78	

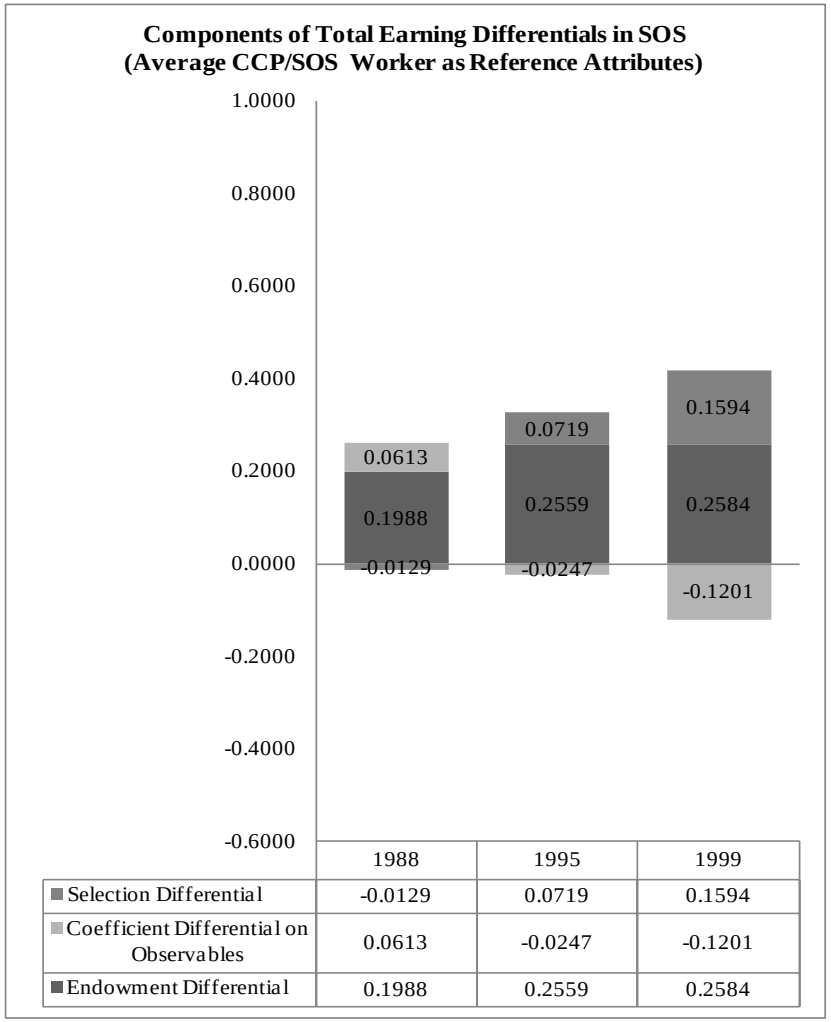
	Coefficient		S.E.		Test statistic	
1995	NCCP/SOS	NonCCP/NSOS	NCCP/SOS	NonCCP/NSOS	Difference	
four years' college or more	0.383	0.499	0.028	0.149	0.77	
two or three years' college	0.247	0.335	0.022	0.091	0.94	
professional school	0.198	0.253	0.022	0.079	0.67	
senior high school	0.072	0.083	0.019	0.04	0.25	
Male	0.14	0.154	0.014	0.034	0.38	

	Coefficient		S.E.		Test statistic	
1999	NCCP/SOS	NonCCP/NSOS	NCCP/SOS	NonCCP/NSOS	wald statistic	
four years' college or more	0.616	0.688	0.048	0.138	0.49	
two or three years' college	0.385	0.497	0.037	0.091	1.14	
professional school	0.193	0.267	0.036	0.088	0.78	
senior high school	0.116	0.216	0.028	0.066	1.39	*
Male	0.086	0.251	0.023	0.047	3.15	***

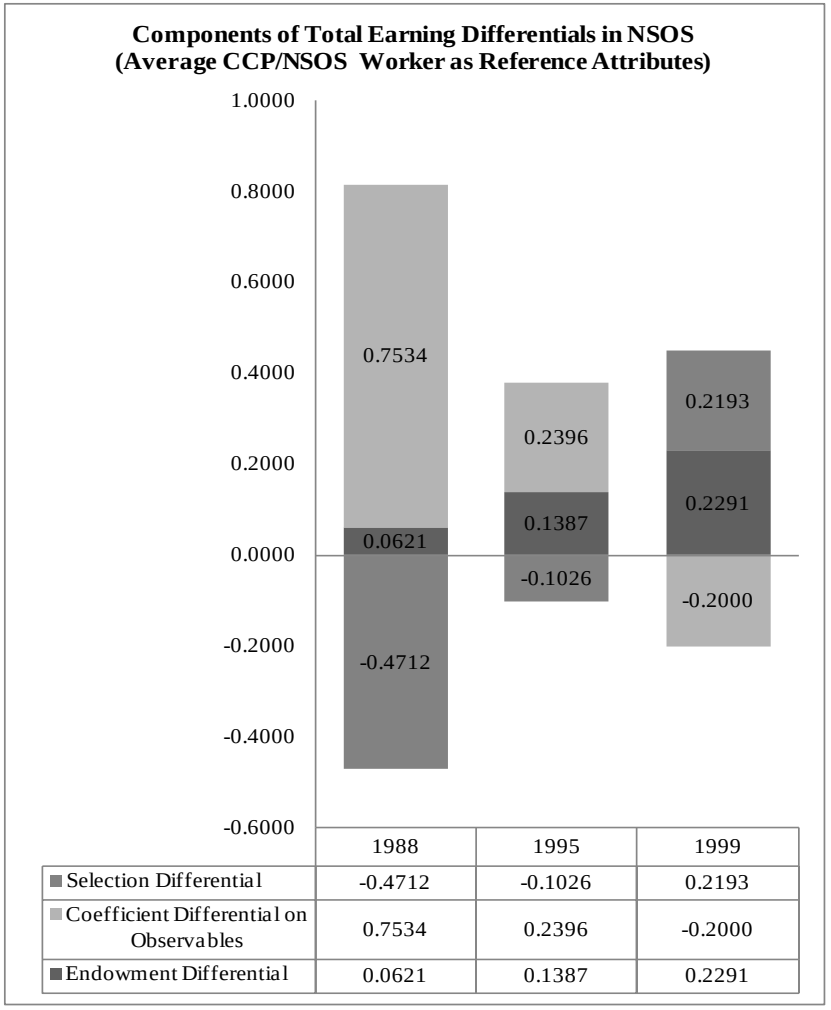
* p<.10, ** p<.05, *** p<.01

Appendix G

Figure G.1 Component of Earning Differential in Two Sectors – Weight = 0

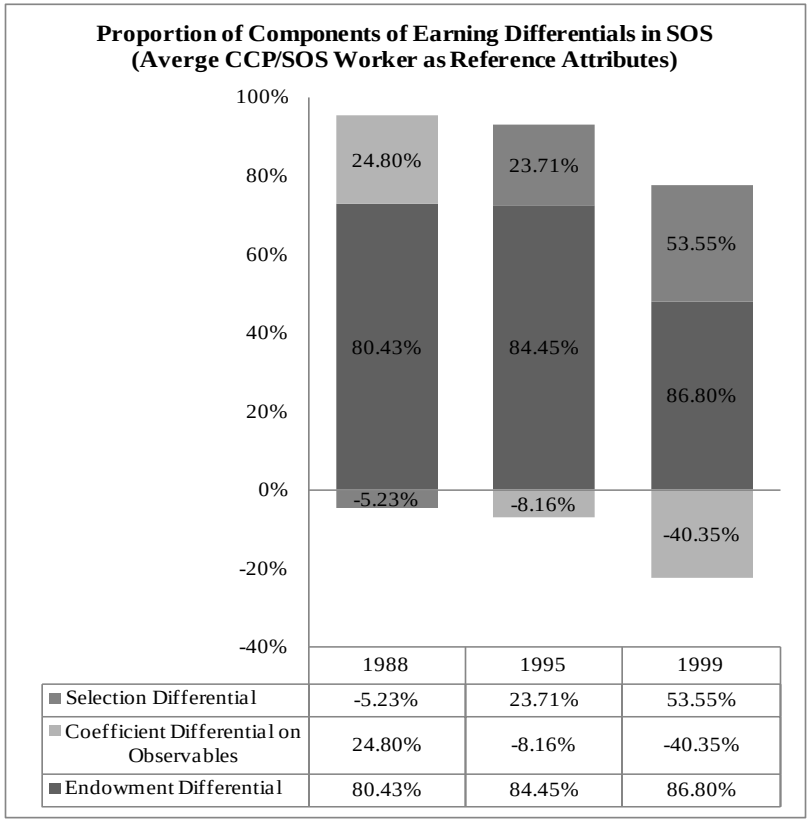


	1988	1995	1999
Selection Differential	-0.0129	0.0719	0.1594
Coefficient Differential on Observables	0.0613	-0.0247	-0.1201
Endowment Differential	0.1988	0.2559	0.2584



	1988	1995	1999
Selection Differential	-0.4712	-0.1026	0.2193
Coefficient Differential on Observables	0.7534	0.2396	-0.2000
Endowment Differential	0.0621	0.1387	0.2291

Figure G.2 Proportion of Components of Earnings Equations in Two Sectors – Weight = 0



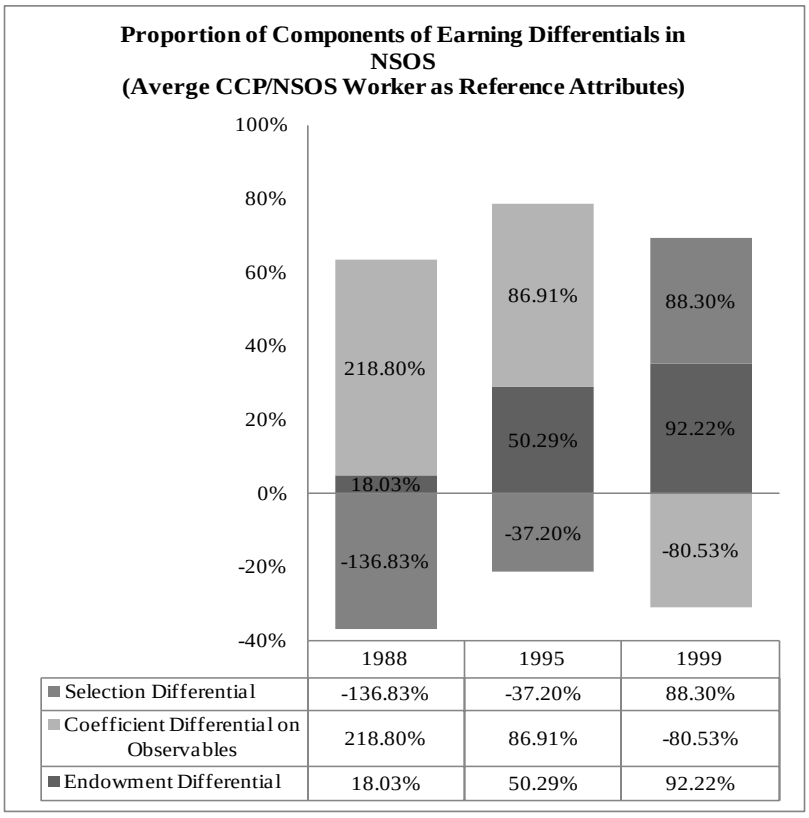


Figure G.3 Endowment and Unexplained Differential in Two Sectors – Weight = 0

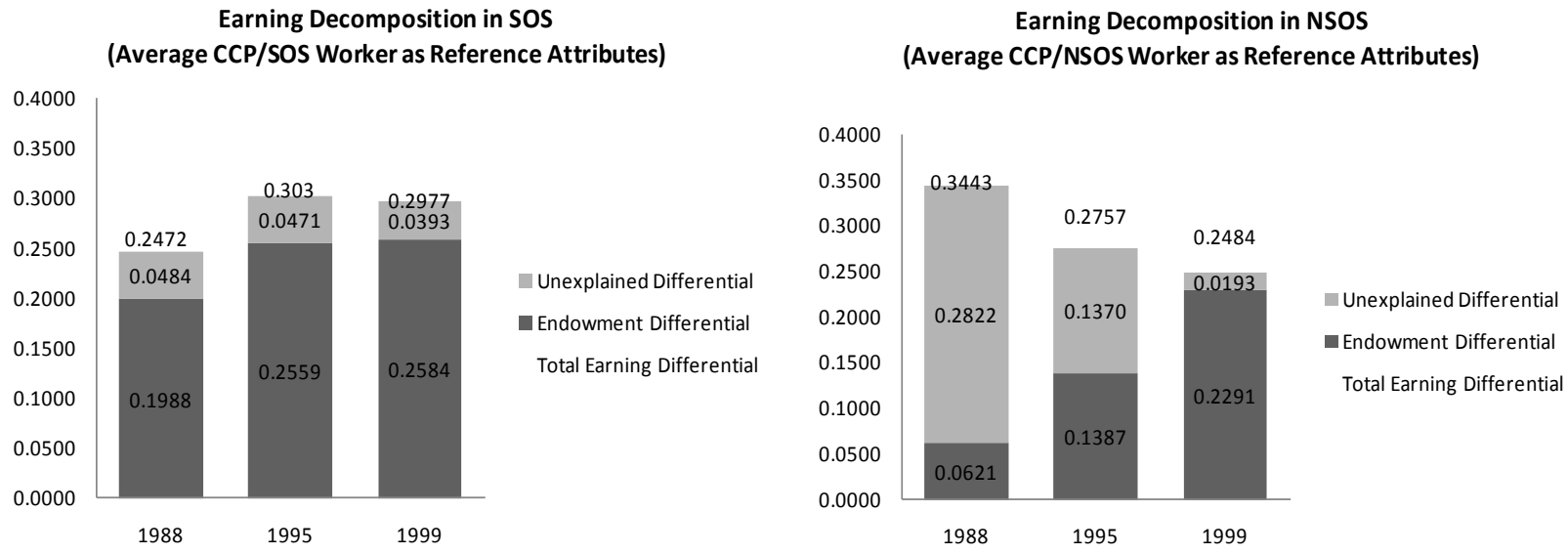
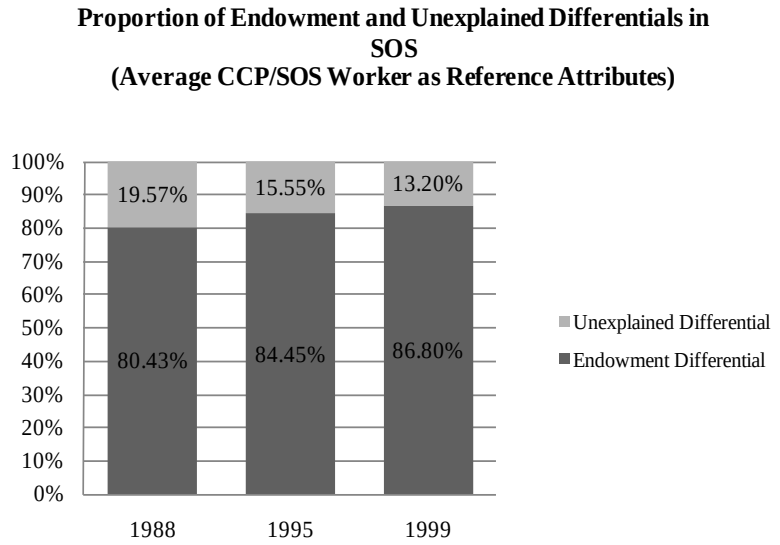
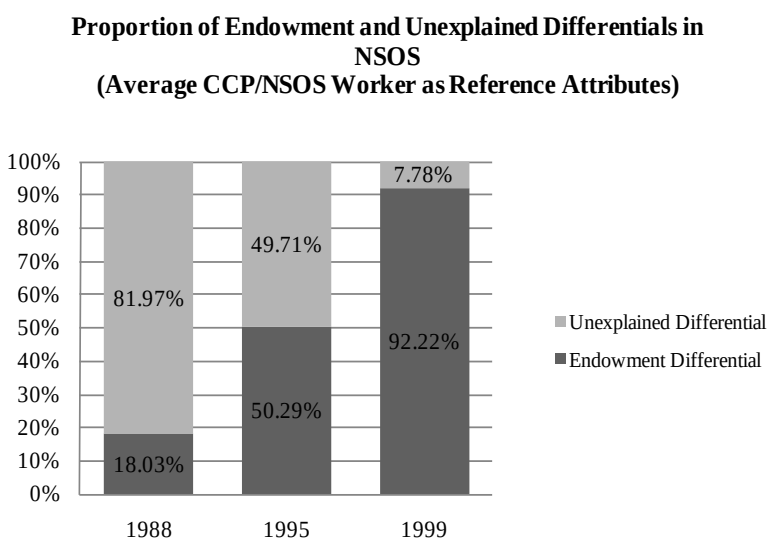


Figure G.4 Proportion of Endowment and Unexplained Differentials in Two Sectors – Weight = 0





Appendix H

Additional Robust Test on Instrument Variables

Ideally, identification variables are expected to impact only people's choice but not their earning level. The finding of significant coefficients of these variables in the multinomial model provides evidences to meet the first requirement. To test if they meet the second requirement, I conduct a test which is similar to an overidentification test. I obtain a residual from the regression of annual earnings of individuals on all exogenous variables for each alternative, and then I run a regression of the residual on these identification variables. It is found that the identification variable, 'nature of recruitment' is not statistically significant in the CCP/SOS, CCP/NSOS and NonCCP/NSOS categories in 1995. The 'parental Party membership affiliation' and 'mother's years of schooling' do not have statistically significantly impact on the annual earnings in any category, while the coefficient of 'nature of recruitment' is not statistically significant in the CCP/SOS and NonCCP/NSOS categories and that of 'father's years of schooling' is statistically significant in NonCCP/SOS category only. It further provides statistical evidence that the identification variables considered in the paper are valid.

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